PROJECT MANUAL

CITY OF PORTSMOUTH

PORTSMOUTH, NEW HAMPSHIRE



CORPORATE DRIVE RECONSTRUCTION

BID #03-24

FOR CONSTRUCTION

August 16, 2023



Portsmouth, New Hampshire FILE NO. 2184

CITY OF PORTSMOUTH

PORTSMOUTH, NEW HAMPSHIRE



CORPORATE DRIVE RECONSTRUCTION

Bid # 03-24



August 16, 2023

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Underwood Engineers, Inc. 25 Vaughan Mall Portsmouth, New Hampshire 03801

FILE NO. <u>2184</u>

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ADVERTISEMENT FOR BIDS

City of Portsmouth, New Hampshire

Owner

Department of Public Works, 680 Peverly Hill Road, Portsmouth, NH 03801

Address

Separate sealed BIDS for the construction of **Corporate Drive Reconstruction** will be received at the **City of Portsmouth Purchasing Department, City Hall, 1 Junkins Avenue, Portsmouth, NH 03801**, until **2:00 p.m.** local time on <u>September 21, 2023</u>. BIDS will then be publicly opened and read aloud at said office and time. The Project includes, but is not limited to, drainage, roadway, sidewalk, and stormwater improvements along 6,600 linear feet of Corporate Drive from the vicinity of Goose Bay Drive To Grafton Road.

There will be a **non-mandatory** pre-bid meeting on <u>September 7, 2023</u>, at **1:00 PM**. The prebid 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.

- 1. Completion time for the base bid project will be calculated as calendar days as specified in the Agreement, from the date specified in the Notice to Proceed.
 - 270 Calendar days for Substantial Completion
 - **300** Calendar days for **Final Completion** except final pavement overlay
 - Final wearing course overlay will be the following season
- 2. Liquidated damages will be in the amount of \$1,000 for each calendar day from the date established for Substantial Completion, and \$500 for each calendar day 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 amount of the Bid.
- 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 Procurement Coordinator

by email, purchasing@cityofportsmouth.com, or by phone (603) 610-7227. Questions must be received by 1:00 PM on September 13, 2023.

Electronic Contract Documents (Plans, Specifications, and Addenda) may be obtained at the City's website <u>http://cityofportsmouth.com/finance/purchasing.htm</u>. Documents are not available for pickup.

Addenda to this bid document, including response to questions submitted will not be provided directly to bidders, but <u>will be posted on the City's website</u>, under the project heading by 2:00 PM on September 14, 2023. <u>It will be the bidder's responsibility to check the website for any addenda issued prior to submitting their bid.</u> Bidders must acknowledge receipt of addendums with their Bid (page A-3.1).

INFORMATION FOR BIDDERS

BIDS will be received by <u>The City of Portsmouth, New Hampshire</u> (herein called the "OWNER"), at <u>Purchasing Dept., 1 Junkins Avenue, Portsmouth, NH 03801</u> until <u>2:00 PM, September 21, 2023</u>, 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 Avenue, Portsmouth, NH 03801

Each sealed envelope containing a BID must be plainly marked on the outside as BID for <u>03-24</u> <u>Corporate Drive Reconstruction</u> and the envelope should 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 <u>City of Portsmouth Purchasing Department</u>, <u>City Hall</u>, 1 Junkins Avenue, <u>Portsmouth</u>, <u>NH03801</u>.

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 (Base Bid plus all Bid Alternates). 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.

The party to whom the contract is awarded will be required to execute the AGREEMENT and obtain the PERFORMANCE BOND and PAYMENT 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, PERFORMANCE 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. The Contractor shall notify the Owner if supply chain for obtaining materials should impact the start of the work. 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 OWNER 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.

PRE-BID MEETING

There will be a **non-mandatory pre-bid meeting** as specified in the Advertisement for Bids. All prospective bidders must attend.

MANUFACTURERS EXPERIENCE

Wherever it may be written that an equipment manufacturer must have a specified period of experience with his product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide a bond or cash deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure.

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. Contractors shall comply with the requirements of these regulations.

INDEMNIFICATION

Contractor shall defend, indemnify and hold harmless Portsmouth, and its agents, officials and employees from and against any and all claims, actions, damages and losses incurred by Portsmouth arising out of or relating to Contractor's negligence or breach of its obligations or warranties set forth in this Agreement, except to the extent such claims, actions, damages or losses are caused by the negligent acts or omissions of Portsmouth.

NON-DISCRIMINATION IN EMPLOYMENT

Any entity that enters into a contact for goods or services with the City of Portsmouth or any of its boards, agencies and departments and any recipient of city funds shall:

Implement an employment nondiscrimination policy prohibiting discrimination in hiring, discharging, promoting, or demoting, matters of compensation, or any other employment-related decision or benefit on account of actual or perceived race, ethnicity, color, religion, national origin, gender, disability, age, military status, sexual orientation, gender identity, gender expression, or marital or familial status.

Not discriminate in the performance of the contract on account of actual or perceived race, ethnicity, color, religion, national origin, gender, disability, age, military status, sexual orientation, gender identity, gender expression, or marital or familial status.

COPIES OF THE CONTRACT

There shall be multiple executed copies of the Contract to be distributed as follows:

a) One (1) copy each to the Engineer, and Contractor. Two (2) copies will go to the Owner.

NON-RESIDENT CONTRACTORS

The successful bidder, if a corporation established under laws other than the State of New Hampshire, shall file, at the time of the execution of the contract, with the Owner, notice of the name of its resident attorney, appointed as required by the laws of the State of New Hampshire.

The successful bidder, if not a resident of New Hampshire, and not a corporation, shall file, at the time of execution of the contract, with the Owner a written appointment of a resident of the state of New Hampshire, having an office or place of business therein, to be his true and lawful attorney

upon whom all lawful processes in any actions or proceedings against him may be served; and in such writing, which shall set forth said attorney's place of residence, shall agree that any lawful process against him which is served on said attorney shall be of the same legal force and validity as if served on him and that the authority shall continue in force so long as any liability remains outstanding against him in New Hampshire. The power of attorney shall be filed in the office of the Secretary of State if required, and copies certified by the Secretary shall be sufficient evidence thereof. Such appointment shall continue in force until revoked by an instrument in writing, designating in a like manner some other person upon whom such processes may be served, which instrument shall be filed in the manner provided herein for the original appointment.

A Non-resident Contractor shall be deemed to be:

- a) A person who is not a resident of the State of New Hampshire.
- b) Any partnership that has no member thereof resident of the State of New Hampshire.
- c) Any corporation established under laws other than those of the State of New Hampshire.

BIDDERS QUALIFICATIONS

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

A. 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.

- B. BIDDER shall maintain a permanent place of business.
- C. BIDDER shall have adequate personnel and equipment to perform the work expeditiously.
- D. BIDDER shall have suitable financial status to meet obligations incidental to the work.
- E. BIDDER shall have appropriate technical experience satisfactory to the Engineer and the Division in the class of work involved.

F. BIDDER shall be registered with the Secretary of State to transact business in New Hampshire.

G. BIDDER shall have performed to the satisfaction of the Engineer and the Division on previous contracts of a similar nature.

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

I. The BIDDER shall be Pre-qualified with NHDOT for Road Construction.

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.

RESERVATION OF RIGHTS

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

A-3.1

BID

Proposal of	(hereinafter
called "BIDDER"), organized and existing under the	e laws of the State of
doing business as(Corporation, Partnership, Individual)	
To the City of Portsmouth , NH	(hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK For the construction of <u>Corporate Drive Reconstruction</u>

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 base bid PROJECT within the number of calendar days (exclusive of winter shut down) from the date specified in the NOTICE TO PROCEED. The **Contractor shall notify the Owner if supply chain for obtaining materials should impact the start of the work.**

Liquidated damages will be in the amount of \$ **1,000.00** 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 Paragraph 12.03 of the Supplemental Conditions.

BIDDER acknowledges receipt of the following ADDENDUM:

Bid Instructions:

The work under this contract consists of a base bid and bid alternates as follows:

Base Bid

The base bid will include drainage improvements and road reconstruction as shown/specified in the Contract Documents.

Bid Alternatives

- (1) Sidewalk Extension STA 70+00 to STA 73+00
- (2) 16" HDPE Sleeves
 - a. STA 58+00 (Oak Avenue)
 - b. STA 93+50 (Grafton Road)

In preparing the Bid Form, Bidders shall note the following:

- (1) Insert Unit Price (numeric amount in dollars and cents) under "Unit Price in Figures" for each Item.
- (2) Multiply the "Est. Quantity" by the "Unit Price in Figures" and insert the product for "Item Total in Figures" for each Item.
- (3) Add all products in the "Item Total in Figures" and insert the sum for the "Total Base Bid Price" in numeric value and words.
- (4) In the event of a discrepancy between a "Unit Price in Figures" and "Item Total in Figures", the "Unit Price in Figures" shall control, and the "Item Total in Figures" shall be corrected by the Owner during the review of bids.
- (5) In the event of a discrepancy between the sum total of the "Item Total in Figures" and the "Total Base Bid Price", the sum total of the "Item Total in Figures" shall control, and the "Total Base Bid Price" shall be corrected by the Owner during the review of bids.
- (6) Base Bid includes all work <u>except</u> those included in Bid Alternates.

An unbalanced or unreasonable lump sum or unit price submitted herein may be grounds for rejection of the Bid. Specific items of this Contract may be eliminated or reduced in quantity to keep within limits of available funding, at the OWNER'S option.

Unit prices set for certain items (MIN.) are minimum unit prices established by the Engineer to be used by the Bidder.

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 available for this contract.
- 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. Civil Engineering
- b. Utility Installation
- c. Other work

	Est.					
Item No.	Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
SCHEDULE 1	- DRAINAG	E IMPROV	/EMENTS			
201.21	5	Ea.*	Removing Small Trees (where directed): Dollars andCents per	Ea.*	/ Ea.*	
201.22	2	Ea.*	Removing Large Trees (where directed): Dollars andCents per	Ea.*	/ Ea.*	
201.4	7	Ea.*	Removing Stumps (where directed): Dollars andCents per	Ea.*	/ Ea.*	
201.52	1	Allowance	Trimming of Trees Seven Thousand Five Hundred Dollars and Zero Cents	Allowance	\$7,500 / Allowance	\$7,500
202.31	75	СҮ	Fill and Abandon Pipes Dollars andCents per	СҮ	/ CY	
202.32	50	СҮ	Fill and Abandon StructureDollars andCents per	СҮ	/ CY	
202.41	175	LF	Removal of Existing Pipe (0-24" Dia.)Dollars andCents per	LF	/ LF	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
202.43	50	LF*	Removal and Disposal of Asbestos (ACM) Pipe, 0-24" Diameter: Dollars and Cents per	LF*	/ LF*	
206.19	100	CY*	Common Structure Excavation - Exploratory: Dollars and Cents per	CY*	/ CY*	
206.2	100	CY*	Rock Structure Excavation: Dollars and Cents per	CY*	/ CY*	
209.3	100	CY*	Granular Backfill (Sand) (where directed)Dollars andCents per	CY*	/ CY*	
403.99	700	Ton*	Temporary Pavement (Where Directed): Dollars andCents per	Ton*	/ Ton*	
603.0001	1,000	LF*	Video Inspection (Where Directed) Dollars andCents per	LF*	/ LF*	
603.0002	1,600	LF	Heavy Cleaning & Video Inspection (Existing Drains) (where directed) Dollars and Cents per	LF	/ LF	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
603.81018	1,700	LF	18" PVC SDR 35 Drain Pipe Dollars and Cents per	LF	/ LF	
603.82212	1,400	LF	12" PE Pipe (Smooth Interior): Dollars and Cents per	LF	/ LF	
603.82215	1,000	LF	15" PE Pipe (Smooth Interior): Dollars and Cents per	LF	/ LF	
604.007	60	Ea.	Polyethylene Liner Dollars and Cents per	Ea.	/ Ea.	
604.0008	28	Ea.	Catch Basin Hoods (12" to 18" Diameter) Dollars andCents per	Ea.	/ Ea.	
604.12403	15	Ea.	Catch Basin, Type B, 4 ft. Diameter, 3' Sump: Dollars and Cents per	Ea.	/ Ea.	
604.12404	10	Ea.	Catch Basin, Type B, 4 ft. Diameter, 4' Sump: Dollars and Cents per	Ea.	/ Ea.	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
604.12444	2	Ea.	Catch Basin, Type B Square 4x4x4, 3' Sump: Dollars and Cents per	Ea.	/ Ea.	
604.12503	1	Ea.	Catch Basin, Type B, 5 ft. Diameter, 3' Sump: Dollars and Cents per	Ea.	/ Ea.	
604.324	13	Ea.	Drainage Manholes (4-ft. Diameter):Dollars andCents per	Ea.	/ Ea.	
604.325	8	Ea.	Drainage Manholes (5-ft. Diameter): Dollars and Cents per	Ea.	/ Ea.	
604.326	2	Ea.	Drainage Manholes (6-ft. Diameter): Dollars and Cents per	Ea.	/ Ea.	
604.62	1	Ea.	Manhole Covers & Frames Dollars andCents per	Ea.	/ Ea.	
604.72	31	Ea.	Grates & Frames, Type B Dollars andCents per	Ea.	/ Ea.	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
604.811	25	Ea.	Field Core Existing Structure (6" to 18" Diameter Pipe) Dollars andCents per	Ea.	/ Ea.	
604.93	50	LF*	Trench Stabilization - Geogrid (where directed): Dollars andCents per	LF*	/ LF*	
628.3	11,600	LF	Sawed Pavement Dollars andCents per	LF	/ LF	
611.9512	100	SF*	2"x 24" Rigid Insulation Dollars andCents per	SF*	/ SF*	
1008.12	2	Ea.*	Waterline Relocation at Drain Crossing Dollars andCents per	Ea.*	/ Ea.*	
1008.13	5	Ea.*	Unknown Utiltiy CrossingDollars andCents per	Ea.*	/ Ea.*	
1008.14	5	Ea.*	Repair of Unknown or Mismarked Utility Dollars andCents per	Ea.*	/ Ea.*	
TOTAL SCHEDULE 1						

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
SCHEDULE 2	- ROAD RE	CONSTRU	CTION			
203.1	13,900	СҮ	Common Excavation: Dollars and Cents per	СҮ	/ CY	
203.6	100	СҮ	Embankment In Place (F): Dollars andCents per	СҮ	/ CY	
214	1	Unit	Fine Grading: Dollars and Cents per	Unit	/ Unit	
304.3	25	СҮ	Crushed Gravel (sidewalks)Dollars andCents per	СҮ	/ CY	
304.35	800	СҮ	Crushed Gravel for Drives Dollars andCents per	СҮ	/ CY	
304.4	9,000	СҮ	Crushed Stone (Fine) Dollars andCents per	СҮ	/ CY	
403.11A	4,300	Ton	Hot Bit. Pavement - Machine Method (Binder): Dollars andCents per	Ton	/ Ton	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
403.11B	1,900	Ton	Hot Bit. Pavement - Machine Method (Wearing Course):Dollars andCents per	Ton	/ Ton	
403.12	800	Ton	Hot Bit. Pavement - Hand Method: Dollars and Cents per	Ton	/ Ton	
417	1,400	SY	Cold Planing Bituminous SurfacesDollars andCents per	SY	/ SY	
604.4	60	VF	Reconstructing/Adjusting Catch BasinsDollars andCents per	VF	/ VF	
604.5	23	VF	Reconstucting/Adjusting Drain Manholes Dollars and Cents per	VF	/ VF	
604.51	64	VF	Reconstructing/Adjusting Sewer ManholesDollars andCents per	VF	/ VF	
605.79	5	Ea.	Underdrain Flushing Basin Dollars andCents per	Ea.	/ Ea.	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
605.82251	3,300	LF	Aggregate Underdrain Type 2, w. 6" Perf. PE Pipe: Dollars and Cents per	LF	/ LF	
608.34	120	SY	4 in. Reinforced Concrete Sidewalk Dollars andCents per	SY	/ SY	
608.36	60	SY	6 in. Reinforced Concrete Sidewalk Dollars andCents per	SY	/ SY	
608.54	15	SY	Detectable Warning Devices, Cast IronDollars andCents per	SY	/ SY	
609.01	3,700	LF	Straight Granite Curb Dollars and Cents per	LF	/ LF	
609.5	8,600	LF	Reset Granite Curb Dollars andCents per	LF	/ LF	
632.0104	27,000	LF	Retroflective Paint Pavement Marking, 4" Line Dollars andCents per	LF	/ LF	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount	
632.0112	300	LF	Retroflective Paint Pavement Marking, 12" Line Dollars andCents per	LF	/ LF		
632.3112	300	LF	Retroflective Thermoplastic Pavement Marking, 12" Line Dollars andCents per	LF	/ LF		
632.32	80	SF	Retroflective Thermoplastic Pavement Marking, Symol or Word Dollars andCents per	SF	/ SF		
646.512	8,700	SY	Turf Establishment w. Mulch, Tackifiers and Loam (F): Dollars andCents per	SY	/ SY		
912	1	Allow	R&R Landscaping: Ten Thousand Dollars and Zero Cents	Allow	\$10,000 / Allow	\$10,000	
	TOTAL SCHEDULE 2						

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
SCHEDULE 3	- COMMO	N ITEMS				
618.61	1	Allow	Uniformed Officers w/Vehicle (Allowance): Twenty Thousand Dollars and Zero Cents	Allow	\$20,000 / Allow	\$20,000
618.7	2,300	Hrs.	Flaggers Dollars andCents per	Hrs.	/ Hrs.	
619.1	1	Unit	Maintenance of Traffic: Dollars and Cents per	Unit	/ Unit	
619.25	72	Wk	Portable Changeable Message Sign: Dollars and Cents per	Wk	/ Wk	
645.44	850	SY*	Temporary Slope Stabilization Type D (Wildlife Friendly) Dollars andCents per	SY*	/ SY*	
645.512	1,000	LF*	Compost Sock for Erosion & Sediment Control: Dollars and Cents per	LF*	/ LF*	
645.531	2,600	LF*	Silt Fence: Dollars and Cents per	LF*	/ LF*	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
645.533	70	Ea.	Inlet Filter BasketDollars andCents per	Ea.	/ Ea.	
645.7	1	Unit	Storm Water Pollution Prevention Plan: Dollars and Cents per	Unit	/ Unit	
645.701	1	Unit	Implement and Maintain Storm Water Pollution Prevention Plan: Dollars and Cents per	Unit	/ Unit	
645.71	100	HR	Monitoring SWPPP and Erosion and Sediment ControlsDollars andCents per	HR	/ HR	
651.001	5	Ea.*	Evergreen Tree, 6'-8' High (where directed): Dollars andCents per	Ea.*	/ Ea.*	
652.004	1	Ea.*	Deciduous Tree, 4" Caliper (where directed): Dollars andCents per	Ea.*	/ Ea.*	
692	1	Unit	Mobilization: Dollars and Cents per	Unit	/ Unit	

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount
915	1,000	LB	Calcium Chloride for Dust Control Dollars andCents per	LB	/ LB	
1008.2	1	Allow	Alterations and Addition as Needed - Soil Testing Allowance Seven Thousand Five Hundred Dollars and Zero Cents	Allow	\$7,500 / Allow	\$7,500
1010.15	1	Allow.	Fuel Adjustment Ten Thousand Dollars and Zero Cents	Allow.	\$10,000 / Allow.	\$10,000
1010.2	1	Allow	Asphalt Cement Adjustment: Ten Thousand Dollars and Zero Cents	Allow	\$10,000 / Allow	\$10,000
	TOTAL SCHEDULE 3					

Item No.	Est. Quantity	Units	Item Description (and Unit Price written in words)		Unit Price	Amount	
SCHEDULE 4	CHEDULE 4 - STORMWATER TREATMENT						
1010.1101	11	Unit	Pre-Treatment Chamber Dollars andCents per	Unit	/ Unit		
1010.1102	3	Unit	High Rate Biofiltration Unit - SmallDollars andCents per	Unit	/ Unit		
1010.1103	1	Unit	High Rate Biofiltration Unit - Medium Dollars andCents per	Unit	/ Unit		
1010.1104	1	Unit	High Rate Biofiltration Unit-Large Dollars andCents per	Unit	/ Unit		
1010.12	1	Unit	Flow Through Stormwater Treatment Unit Dollars andCents per	Unit	/ Unit		
	TOTAL SCHEDULE 4						

A-3.18 CONTRACTOR'S BID SCHEDULE

	Est.						
Item No.	Quantity	Units	Item Description (and Unit Price written in words)		Unit Price		Amount
SCHEDULE 5	- Bid Add A	Alt. #1: Sidev	valk Extension (STA 70+00 to STA 72+50)	1			
			Crushed Gravel (sidewalks)				
304.3	20	CY	Dollars and				
			Cents per	CV		/ CV	
			4 in. Reinforced Concrete Sidewalk			/ 01	
608.34	80	SY	Dollars and				
			Cents per	SY		/ SY	
			6 in. Reinforced Concrete Sidewalk				
608.36	25	SY	Dollars and				
			Cents per	SY		/ SY	
600 54	4.5	CI I	Detectable Warning Devices, Cast Iron				
608.54	45	SY	Dollars and	cν		1.637	
			Cents per	51		/ 51	
					TOTAL SCHEDULE 5		
SCHEDULE 6	- Bid Add A	Alt. #2: Sleev	res for Non-Potable Water Pipe				
			16" HDPE DR11 Casing Pipe (~STA 58+00) - Oak Ave.				
611.41416A	1	Unit	Dollars and				
			Cents per	Unit		/ Unit	
			16" HDPE DR11 Casing Pipe (~STA 93+75) Grafton Road				
611.41416B	1	Unit	Dollars and				
			Cents per	Unit		/ Unit	
					TOTAL SCHEDULE 6		
					TOTAL SCHEDULE V		
			ριη τοτ μ	DDAIN			
BID IUIAL - DRAINAGE AND ROAD							
(Schedules 1, 2, 3 + 4)							
Bid Add Alt. #1 - Sidewalks							
(Schedule 5)							
Bid Add Alt. #2 Sleeves							
(Schedule 6)							
	Name of	Contractor:		Date	:		
Notes to Bidde	rs:			_			

1. The lowest bid will be determined based on the lowest value for Bid Total - Drainage and Road (Schedules 1, 2, 3 and 4).

2. (*) Means Indeterminate Quantity.

3. (F) Means Final Quantity

4. The owner reserves the right to waive any informalities or minor defects or reject any and all bids and to take any other action that is in their own best interest.

5. Unit prices in words shall govern over unit prices in numbers in determination of Bid Total.

	A-3.	19
16. With	what banks do you conduct busine	ess?
Do y	ou grant the Engineer permission	to contact this (these) institutions?(Yes)
		(No)
NOTE:	Bidders may be required to fu statement as part of the award	rnish their latest financial process.
	Respectfully submitted:	
	Signature	Address
	Title	Date
		Daing duly sworn, denotes and save
that he is		Being dury sworn, deposes and says
	of	
and that th true and	he answers to the foregoing questi	(Name of Organization) ons and all statements contained therein are
correct.		
Sworn to befo	ore me thisday of	, 20
		Notary Public
My comm	nission expires	
(Seal - If	BID is by Corporation)	
ATTEST:	:	
BIDDEI DOCUMI	R agrees to perform all the work d ENTS for the following unit price	escribed in the CONTRACT s or lump sum:

NOTE: BIDS shall include sales tax and all other applicable taxes and fees

B-4.1

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)
(Address of Contractor)
a, hereinafter called Principal,
(Corporation, Partnership or Individual)
and
(Name of Surety)
(Address of Surety)
hereinafter called Surety, are held and firmly bound unto
City of Portsmouth, New Hampshire
(Name of Owner)
Department of Public Works, 680 Peverly Hill Road, Portsmouth NH 03801
(Address of Owner)
hereinafter called OWNER , in the total aggregate penal sum of
Dollars, \$ ()
in lawful money of the United States, for the payment of which sum well and truly to be made, we
bind ourselves, our heirs, executors, administrators successors, and assigns, jointly and severally,
firmly by these presents.
THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the OWNER , dated the day of, a
copy of which is hereto attached and made a part hereof for the construction of:
Corporate Drive Reconstruction

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extension thereof which may be granted by the **OWNER**, with or without notice to the Surety and during the one year guaranty period, and if the **PRINCIPAL** shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the **OWNER** from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the **OWNER** all outlay and expense which the **OWNER** may incur in making good any default, then this obligation shall be void: otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to **WORK** to be performed thereunder or the specifications accompanying same shall in any way affect its obligation on this **BOND**, and it does hereby waive notice of any such change, extension of time alteration or addition to the terms of the contract or to the **WORK** or to the specifications.

PROVIDED, FURTHER, that it is expressly agreed that this **BOND** shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the **PRINCIPAL** and the **SURETY** to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this **BOND** and whether referring to this **BOND**, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the **OWNER** and the **CONTRACTOR** shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument	t is executed	in <u>4</u> cou	interparts, each one of
which shall be deemed an original, this		(number) day of	, 20 .
ATTEST:			
Bv.	-]	Principal
(Principal) Secretary (SEAL)	BY		
	-		(Address)
Ву:	-		
Witness as to Principal			
(Address)			
		(Su	rety)
ATTEST:	BY	, ,	
Bv		Attorney	7 - in - Fact
Witness as to Surety		(Add	ress)
(Address)			

NOTE: Date of **BOND** must not be prior to date of Contract.

If **CONTRACTOR** is Partnership, all partners should execute BOND

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

B-1.1

NOTICE OF INTENT TO AWARD

	Dated	, 20 <u>23</u>
ТО:		
	(BIDDER)	
ADDRESS:		
OWNER'S PROJECT NO:		
PROJECT: Corporate Drive Reconstr	ruction	
OWNER'S CONTRACT NO:		
CONTRACT FOR: Corporate Dr	rive Reconstruction	
(Inse	ert name of contract as it appears in the Bid Document	8)
You are notified that your Bid dated_	for the al	oove Contract has been
considered. You are the apparent such	cessful bidder and have been awarde	ed a contract for:
Corporate Drive Road Reconstruction	1	
(Indic	cate total Work, alternates or sections of Work awarde	d)
The Contract Price of your contract is	S	
	Dollars (\$).
XX71-1-1-1-1-1-		
include		and does not
		······································

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 provide documentation if supply chain for obtaining materials will impact the start of the work.

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

4. (List other conditions precedent).

Provide insurance certificates with coverage limits in accordance to section SC 5.04.

Provide Performance Bonds for review and acceptance prior to execution of
Contract.

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.

By	Judie Belanger
	(Owner)

(Signature

Director of Finance and Administration

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

Ву		
The	day of	, 20
Ву		
Title		
Copy to ENGIN	VEER	

(Use Certified Mail, Return Receipt Requested)

B-2.1

AGREEMENT

THIS AGREEMENT, made this		day of	by and
between	City of Portsmouth, NH (Name of Owner)		_, hereinafter called "OWNER"
and		doing business a	as (an individual,) or (a
partnership	,) or (a corporation) hereinafter	r called "CONTRA	ACTOR".

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

1. The CONTRACTOR will commence and complete the construction of

Corporate Drive Reconstruction

(Project)

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

3. The **CONTRACTOR** will commence the work required by the **CONTRACT DOCUMENTS** within <u>10</u> 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 base bid project will be calculated as calendar days (exclusive of winter shut down) from the date specified in the **NOTICE TO PROCEED**:

Substantial Completion

• <u>270</u> calendar days

Final Completion

• <u>300</u> calendar days from the date of substantial completion excluding final pavement overlays.

Liquidated damages will be in the amount of 1,000.00 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

B-2.2

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 <u>\$</u>, or as shown in the **NOTICE OF INTENT TO AWARD**.

- 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 INTENT TO AWARD
 - (F) AGREEMENT
 - (G) 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) SUPPLEMENTAL GENERAL CONDITIONS
 - (R) GENERAL CONDITIONS
 - (S) SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS
 - (T) DRAWINGS prepared by:

Underwood Engineers, Inc.		numbered
1 through [] (Dated [], 2022)	

(T) SPECIFICATIONS prepared or issued by: Underwood Engineers, Inc.

_____ and dated_____, 20<u>22</u>

(U) ADDENDA:

No <u>.</u> ,	dated	, 2022
No <u>. </u>	dated	, 2022
No <u>.</u> ,	dated	, 2022

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 CONTRACTDOCUMENTS.

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 _____ 4 ____ copies, each of which shall be deemed an original on the date first above written.

OWNER: City of Portsmouth, New Hampshire

By:_____ Name: Karen Conard, City Manager

(Please type)

(SEAL) ATTEST: _____

CONTRACTOR: _____

By: _____

Name: _____

Address: _____

(SEAL)

ATTEST: _____

Name:

Title:
B-3.1

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)
(Address of Contractor)
a, hereinafter called Principal, (Corporation, Partnership or Individual)
and (Name of Surety)
(Address of Surety)
hereinafter called Surety, are held and firmly bound unto
City of Portsmouth, New Hampshire
(Name of Owner)
1 Junkins Avenue, Portsmouth, NH 03801
(Address of Owner)
hereinafter called OWNER and unto all persons, firms, and corporations who or which may furnish
labor, or who furnish materials to perform as described under the contract and to their successors
and assigns, in the total aggregate penal sum ofDollars,
(\$) in lawful money of the United States, for the payment of which sum well and
truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns,
jointly and severally, firmly by these presents.
THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the OWNER , dated the day of
20, a copy of which is hereto attached and made a part hereof for the construction of:
Corporate Drive Reconstruction

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in the prosecution of the **WORK** provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such **WORK**, and for all labor cost incurred in such WORK including that be a subcontractor, and to any mechanic or materialman lienholder whether it acquires its lien by operation of State or Federal Law; then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the subcontractors, and persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the **WORK** to be performed thereunder or the **SPECIFICATIONS** accompanying the same shall in any way affect its obligation on this **BOND**, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the **WORK** or to the **SPECIFICATIONS**.

PROVIDED, FURTHER that 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 written notice to any two of the following: The PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days 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, or SURETY, at any place where an office is regularly maintained for the transaction business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, 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 work on said CONTRACT, it being understood, however, that if any limitation embodied in the 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.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED FURTHER, that no final settlement between the **OWNER** and the **CONTRACTOR** shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

N WITNESS WHEREOF, this instrument	is executed	in $\underline{4}_{(number)}$ coun	terparts, each one of
which shall be deemed an original, this		_day of	, 20
ATTEST:			
***	-	Pri	incipal
(Principal) Secretary	DI		
SEAL)	BY _		
	-	(A	Address)
Bv:	-		
Witness as to Principal	-		
(Address)			
		(Sure	ty)
TTEST:	BY		
		Attorney -	in - Fact
Witness as to Surety		(Address)	
(Address)			

NOTE: Date of **BOND** must not be prior to date of Contract. If **CONTRACTOR** is partnership, all partners should execute BOND.

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-3.3

B-4.1

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)
(Address of Contractor)
a , hereinafter called Principal,
(Corporation, Partnership or Individual)
and
(Name of Surety)
(Address of Surety)
hereinafter called Surety, are held and firmly bound unto
City of Portsmouth, New Hampshire
Department of Public Works 680 Powerly Hill Poad Portsmouth NH 02801
(Address of Owner)
hereinafter called OWNER , in the total aggregate penal sum of
Dollars, \$ ()
in lawful money of the United States, for the payment of which sum well and truly to be made, we
bind ourselves, our heirs, executors, administrators successors, and assigns, jointly and severally,
firmly by these presents.
THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the OWNER , dated the day of, a
copy of which is hereto attached and made a part hereof for the construction of:
Corporate Drive Reconstruction

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extension thereof which may be granted by the **OWNER**, with or without notice to the Surety and during the one year guaranty period, and if the **PRINCIPAL** shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the **OWNER** from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the **OWNER** all outlay and expense which the **OWNER** may incur in making good any default, then this obligation shall be void: otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to **WORK** to be performed thereunder or the specifications accompanying same shall in any way affect its obligation on this **BOND**, and it does hereby waive notice of any such change, extension of time alteration or addition to the terms of the contract or to the **WORK** or to the specifications.

PROVIDED, FURTHER, that it is expressly agreed that this **BOND** shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the **PRINCIPAL** and the **SURETY** to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this **BOND** and whether referring to this **BOND**, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the **OWNER** and the **CONTRACTOR** shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument	t is executed	in <u>4</u>	counterparts, each one of
which shall be deemed an original, this		day of	, 20 .
ATTEST:			
By:			Principal
(Principal) Secretary (SEAL)	BY		
			(Address)
By:	-		
Witness as to Principal			
(Address)			
			(Surety)
ATTEST:	BY		
Bv		Atto	orney - in - Fact
Witness as to Surety		(Address)
(Address)			

NOTE: Date of **BOND** must not be prior to date of Contract.

If **CONTRACTOR** is Partnership, all partners should execute BOND

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

NOTICE TO PROCEED

	Dated	, 20 <u>23</u>
TO:		
(Insert Name of Contractor as it appears in the Bid Documents)		
ADDRESS:		
OWNER'S PROJECT NO.		
PROJECT: Corporate Drive Reconstruction		
OWNER'S CONTRACT NO. 03-24		
CONTRACT FOR: Corporate Drive Reconstruction		
You are notified that the Contract Time under	er the above contract will comm	ence to run

on ______ (see Information for Bidders, Page A-2.2 for mutually agreed start date). 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 ______ and _____ respectively (excluding any winter shutdown periods to be added via future change order).

Before you may start any Work at the site, Paragraph 2.01B of the General Conditions provides that you shall deliver to the OWNER (with a copy to ENGINEER) certificate(s) of insurance which is required to be purchased and maintained in accordance with the Contract Documents. Also before you may start any Work at the site, you must:

Attend a preconstruction meeting, have an approved Traffic Control Plan (TCP), Stormwater Pollution Prevention Plan (SWPPP), pertinent shop drawings for work to be completed, and schedule (sequence of work).

Copy to ENGINEER

(Use certified Mail, return Receipt Requested)

City of Portsmouth, New Hampshire

Ву _____

(Peter Rice, P.E.)

(Director of Public Works)

ACCEPTANCE OF NOTICE

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

(add other requirements)

(Contractor)			
			Employer Identification
this the		, 20	Number:
By:			_
((Contractor)		

PROJECT:	Corporate Drive Reconstruction	DATE OF ISSU	JANCE:	
OWNER:	City of Portsmouth, New Hampshire	Owner' Project No.		
(Name & Address)	1 Junkins Avenue, Portsmouth, NH 03801			
CONTRACTOR:		ENGINEER:	Underwood Engineers, Inc.	
			25 Vaughan Mall	
			Portsmouth, New Hampshire	
CONTRACT FOR:	Corporate Drive Reconstruction		ENGINEER's Project No.	2184

You are directed to make the following changes in the Contract Documents. <u>Description:</u>

Attachments:

CHANGE IN CONTRACT PRICE	CHANGE I	N CONTRACT TI	ME
Original Contract Price	Original Contract Time:	Days	Date
	Substantial Completion		
	Final Payment		
Previous Change Orders	Net change fro	m previous Change	Orders
<u>\$0.00</u>	Substantial Completion	0	Days
	Final Payment	0	Days
Contract Price prior to this Change Order	Contract Tim	e prior to this Chang	ge Order:
\$0.00		Days	Date
	Substantial Completion	0	
	Final Payment	0	
Net Ingrasse (Decrease) of this Change Order	Net Change	a of this Change Or	dər
Net-increase (Decrease) of this change of the			dei D
	Substantial Completion (add)	0	Days
	Final Payment (add)	0	Days
Contract Price with all approved Change Orders	Contract Time wit	h all approved Chan	nge Orders
\$0.00		Days	Date
	Substantial Completion	0	
	Final Payment	0	

This document will become a supplement to the CONTRACT and all provisions will apply hereto. The attached Constractor'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:		Accepted	Approved:	
	Engineer: Benjamin T. Dreyer, PE	Contractor		Owner/DPW: Dave Defosses
Approved:		Approved:	Approved:	
	Owner/ Finance: Judie Belanger	City Manager: Karen Conard		

No. ____



B.7.1

Field Order No.

Effective Date:	Date of Issuance:
Owner: City of Portsmouth	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer: Underwood Engineers, Inc.	Engineer's Project No.: 2184
Project: Corporate Drive Reconstruction	Contract Name:

Contractor is hereby directed to promptly execute this Field for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:		
	Specification(s)	Drawing(s) / Detail(s)

Description:

Attachments:

ISSUED:		RECEIVED:
Ву:	By:	
Benjamin T. Dreyer, P.	E	Contractor (Authorized Signature)
Title: Project Manager	Title:	
Date:	Date:	

Copy to: Dave Desfosses Jared Sheehan



25 Vaughan Mall Portsmouth, NH, 03801-4012 Tel: 603-436-6192 Fax: 603-431-4733

Effective Date:	Date of Issuance:
Owner: City of Portsmouth	Owner's Contract No.:
Contractor:	Contractor's Project
Engineer Underwood Engineers, Inc.	Engineer's Project No.: 2184
Project: Corporate Drive Reconstruction	Contract Name:

B-8.1

The Contractor is directed to proceed promptly with Description:	the following change(s):
Attachments: [List documents supporting change]	
Purpose for Work Change Directive: Directive to proceed promptly with the Work descr Price and Contract Time, is issued due to: [check one of Non-agreement on pricing of proposed char Necessity to proceed for schedule or other Estimated Change in Contract Price and Contract Tim	ibed herein, prior to agreeing to changes on Contract or both of the following] nge. Project reasons. nes (non-binding, preliminary):
Contract Price S	[increase] [decrease][maximum] [minimum]
Contract Time days	[increase] [decrease].
Basis of estimated change in Contract Price:	
Lump Sum	Unit Price
Cost of the Work	Other
Recommended: Received	:

Engineer: Benjamin T. Dreyer, P.E Contractor's Representative

Distribution:

Owner Pr

Project Manager Field Office

Office Office File No.

Contractor's Application for Payment No.

Application Period:

From Contractor:

Contract: Corporate Drive Reconstruction

Contractor's Project No.

(Date)

Owner's Project No. Funding Agency Project No.

Application for Payment

		Application	for rayment	
	Change Order Summary		Payment Summary	
Approved Change Orders			1. Orignal Contract Price	
Number	Additions	Deductions	2. Net Change by Change Order	
			3. Current Contract Price (Line 1±2)	
			4a. Total Completed	
			4b. Total Stored	
			4. Total completed and Stored	
			5a% x Work Completed	
			5b% x Stored Materials	
			5. Total Retainage (Line 5a. + 5b.)	
Totals	\$0.00	\$0.00	6. Amount Eligible for Payment (Line 4-5)	
Net Change by Change Order		\$0.00	7. Less Previous Payments	
	•		8. Amount Due this Application	
			9. Balance to Finish plus Retainage	

Contractor's Certifications

The undersigned Contractor certifies that: (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: _____(Contractor)

Payment of: (Line 8 or other - attach explanation of other amount) is recommended by: Engineer: Benjamin T. Dreyer, PE (Date) Payment of (Line 8 or other - attach explanation of other amount) is approved by: City of Portsmouth: Dave Desfosses (Date)

1

Via Engineer: Underwood Engineers, Inc.

Application Date:

Engineer's Project No.: 2184

CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No.:	ENGINEER's Project No.: 2184
Project: Corporate Drive Reconstru	uction
CONTRACTOR:	
Contract For:	Contract Date:
This Certificate of Substantial Completion applies to following specified parts thereof:	all Work under the Contract Documents or to the
To: <u>City of Portsmouth, New Hampshire</u>	Dwner)
And To:(Co	ntractor)

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.

B-10.1

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

RESPONSIBILITIES:		
OWNER:		
-		
CONTRACTOR:		
-		
T		
The following documents are	attached to and made a part of this Certificate:	
This certificate does not const	itute an acceptance of Work not in accordance with the	Contract Documents
nor is it a release of CONTRA	CTOR's obligation to complete the Work in accordance	e with the Contract
Documents.		
Executed by ENGINEER on	20	
Executed by ENGINEER OIL	, 20	
	(Benjamin T. Dreyer, PE)	
By:		
CONTRACTOR accepts this	Certificate of Substantial Completion on	. 20
	(Contractor)	
By:		
OWNER accepts this Certific	ate of Substantial Completion on	, 20
	(Dave Desfosses DPW)	
T.		
By:		

B-11.1

CERTIFICATE OF FINAL COMPLETION

Owner's Proje	ct No
Project:	Corporate Drive Reconstruction
Owner:	City of Portsmouth, New Hampshire
Contractor:	
Engineer:	Underwood Engineers, Inc.
Agreement Da Notice to Proc Contractual Su Actual Substan Contractual Fi	te: eed Date: ubstantial Completion Date as modified by Change Orders: ntial Completion Date: nal Completion Date as modified by Change Orders:
The Work to w Owner, Contra Contract is her Documents on	which this Certificate applies has been inspected by authorized representatives of actor and Engineer, the punch list has been completed and the Work of the reby declared to be Finally Complete in accordance with the Contract : Date of Final Completion
This Certificat Contract Docu accordance wi to the date of S	e does not constitute an acceptance of any Work not in accordance with the ments nor is it a release of Contractor's obligation to complete the Work in th the Contract Documents. The Warranty for all Work completed subsequent Substantial Completion expires one year from the date of this Final Acceptance.
Executed by E	ngineer on:, <u>20</u>
By:	
Contractor Ace	cepts this Certificate of Final Completion on:, 20
By:	
Owner Accept	s this Certificate of Final Completion on:, <u>20</u>
By:	

B-12.1

CONTRACTOR'S AFFIDAVIT

STATE OF:	
COUNTY OF:	
Before me, the undersigned a	
Nota	ry Public, Justice of Peace, Alderman)
n 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 out	standing claims and indebtedness of whatever
nature arising out of the performance of the contract	
between The City of Portsmouth, New Hampshire	2
(Owner)	
andof	
(Contractor)	(Address)
for the construction	of the <u>Corporate Drive Reconstruction</u>
1	(Project Name)
and necessary appurtenant installations have been paid	l în full.
(Individual, Partner, or d	aly authorized representative of corporate contractor)

(Title)

Sworn to and subscribed before me

this_____day of_____, 20 ____

Notary Public

B-13.1

Project/Owner	Contractor		
Project: Corporate Drive Reconstruction	Name		
Address:_ <u>N/A</u>	Address:		
PortsmouthNH03801CityStateZip	City State Zip		
Owner_City of Portsmouth, New Hampshire	Contractor License:		
	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
		•	

Witness to Signature

By		

Contractor

By_____

Title _____

C. GENERAL CONDITIONS

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
 - 1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 - 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 - 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 - 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 - 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 - 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 - 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 - 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 - 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 - 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 - 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

- 12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
- 13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
- 14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
- 15. Contractor—The individual or entity with whom Owner has entered into the Agreement.
- 16. Cost of the Work—See Paragraph 11.01 for definition.
- 17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as sodefined.
- 18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
- 19. Engineer—The individual or entity named as such in the Agreement.
- 20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
- 21. General Requirements—Sections of Division 1 of the Specifications.
- 22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
- 23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
- 24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
- 25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
- 26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

- 27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
- 28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
- 29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
- 30. PCBs—Polychlorinated biphenyls.
- 31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
- 32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
- 33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
- 34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
- 35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
- 36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
- 37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
- 38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
- 39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

- 40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
- 41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
- 42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
- 43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
- 44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
- 45. Successful Bidder—The Bidder submitting a responsive Bid to whom Owner makes an award.
- 46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
- 47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
- 48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
- 49. Unit Price Work—Work to be paid for on the basis of unit prices.
- 50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
- 51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

- A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. Intent of Certain Terms or Adjectives:
 - 1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day:

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

D. Defective:

- 1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).
- E. Furnish, Install, Perform, Provide:

- 1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
- 2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
- 3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
- 4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

- 2.01 Delivery of Bonds and Evidence of Insurance
 - A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
 - B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.
- 2.02 Copies of Documents
 - A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.
- 2.03 Commencement of Contract Times; Notice to Proceed
 - A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

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

2.05 Before Starting Construction

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 Preconstruction Conference; Designation of Authorized Representatives

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 Initial Acceptance of Schedules

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

- 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
- 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.
- 3.02 Reference Standards
 - A. Standards, Specifications, Codes, Laws, and Regulations
 - 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the ContractDocuments.
 - 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies:

- 1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
- 2. Contractor's Review of Contract Documents During Performance of Work: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
- 3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.
- B. Resolving Discrepancies:
 - 1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 - 1. A Field Order;
 - 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 Reuse of Documents

- A. Contractor and any Subcontractor or Supplier shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 - 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 Electronic Data

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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

- 4.01 Availability of Lands
 - A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.
- 4.02 Subsurface and Physical Conditions
 - A. Reports and Drawings: The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, or information.
- 4.03 Differing Subsurface or Physical Conditions
 - A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
 - 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; or

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

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

- B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.
- C. Possible Price and Times Adjustments:
 - 1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
 - 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
 - 3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other

professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 Underground Facilities

- A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 - 1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
 - 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- B. Not Shown or Indicated:
 - 1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
 - 2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price

or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 Reference Points

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

4.06 Hazardous Environmental Condition at Site

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by

Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

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

5.03 Certificates of Insurance

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 Contractor's Insurance

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may beliable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:

- 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
- 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
- 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
- 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
- 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
- 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 Owner's Liability Insurance

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- 5.06 Property Insurance
 - A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

- 1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
- 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
- 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
- 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
- 5. allow for partial utilization of the Work by Owner;
- 6. include testing and startup; and
- 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

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

5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery

against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 Receipt and Application of Insurance Proceeds

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of suchduties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

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

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 Substitutes and "Or-Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. "Or-Equal" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

- 2. Substitute Items:
 - a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
 - b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
 - c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
 - d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 Patent Fees and Royalties

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the ContractDocuments.

6.08 Permits

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

6.09 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all

court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

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

6.10 Taxes

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.
- 6.11 Use of Site and Other Areas
 - A. Limitation on Use of Site and Other Areas:
 - 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
 - 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
 - 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
 - B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor

shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

6.12 Record Documents

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

6.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

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

6.15 Hazard Communication Programs

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

6.16 Emergencies

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

6.17 Shop Drawings and Samples

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

- 1. Shop Drawings:
 - a. Submit number of copies specified in the General Requirements.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.
- 2. Samples:
 - a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. Submittal Procedures:
 - 1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
 - 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
 - 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop

Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

- D. Engineer's Review:
 - 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 - 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 - 3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.
- E. Resubmittal Procedures:
 - 1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.
- 6.19 Contractor's General Warranty and Guarantee
 - A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
 - B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

- 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
- 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Engineer;
 - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 - 6. any inspection, test, or approval by others; or
 - 7. any correction of defective Work by Owner.

6.20 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may beliable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor,

Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 Delegation of Professional Design Services

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 Legal Relationships

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions orinactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

- 8.01 Communications to Contractor
 - A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.
- 8.02 Replacement of Engineer
 - A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.
- 8.03 Furnish Data
 - A. Owner shall promptly furnish the data required of Owner under the Contract Documents.
- 8.04 Pay When Due
 - A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.
- 8.05 Lands and Easements; Reports and Tests
 - A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 8.06 Insurance
 - A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.
- 8.07 *Change Orders*
 - A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 Inspections, Tests, and Approvals

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

8.09 Limitations on Owner's Responsibilities

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the ContractDocuments.
- 8.10 Undisclosed Hazardous Environmental Condition
 - A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.
- 8.11 Evidence of Financial Arrangements
 - A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.
- 8.12 Compliance with Safety Program
 - A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

- 9.01 Owner's Representative
 - A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.
- 9.02 Visits to Site
 - A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits

and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

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

9.04 Authorized Variations in Work

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

9.05 Rejecting Defective Work

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

9.06 Shop Drawings, Change Orders and Payments

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

- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 Determinations for Unit Price Work

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

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Engineer's Authority and Responsibilities

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

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the ContractDocuments.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.
- 9.10 Compliance with Safety Program
 - A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

- 10.01 Authorized Changes in the Work
 - A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
 - B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.
- 10.02 Unauthorized Changes in the Work
 - A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 Notification to Surety

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 Claims

- A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The

opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
 - 1. deny the Claim in whole or in part;
 - 2. approve the Claim; or
 - 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
 - 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on

Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

- 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
- 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
- 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
- 5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.
- B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
 - 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
 - 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. Cash Allowances:
 - 1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. Contingency Allowance:
 - 1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.
- 11.03 Unit Price Work
 - A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
 - B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
 - C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

- 12.01 Change of Contract Price
 - A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
 - B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
 - C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

- c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 Delays

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the

control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

- 13.01 Notice of Defects
 - A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.
- 13.02 Access to Work
 - A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.
- 13.03 Tests and Inspections
 - A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
 - B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.

- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 Correction Period

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute

resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation orrepose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and

equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

- 14.01 Schedule of Values
 - A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.
- 14.02 Progress Payments
 - A. Applications for Payments:
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 - 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the
Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

- 1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
- 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
- 3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment toContractor.
- 4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or

- b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
- d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
- e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
- 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.
- C. Payment Becomes Due:
 - 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.
- D. Reduction in Payment:
 - 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or

- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
- 2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
- 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.
- 14.03 Contractor's Warranty of Title
 - A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of allLiens.
- 14.04 Substantial Completion
 - A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
 - B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
 - C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
 - D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 Partial Utilization

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

- A. Application for Payment:
 - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
 - 2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
 - 3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.
- B. Engineer's Review of Application and Acceptance:
 - 1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 Final Completion Delayed

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

- A. The making and acceptance of final payment will constitute:
 - 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 - 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

- 15.01 Owner May Suspend Work
 - A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.
- 15.02 Owner May Terminate for Cause
 - A. The occurrence of any one or more of the following events will justify termination for cause:

- 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
- 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
- 3. Contractor's repeated disregard of the authority of Engineer; or
- 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 - 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 - 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 - 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 Owner May Terminate For Convenience

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph

10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

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

17.02 Computation of Times

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

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 Headings

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

ARTICLE 1. DEFINITIONS & TERMINOLOGY

SC-1.01 Defined Terms:

SC-1.01

Delete definition 1.01 A.19 entitled "Engineer" in the General Conditions in its entirety and insert the following in its place:

"The individual or entity duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly appointed representatives."

SC-1.01

Delete definition 1.01 A.42 entitled "Specifications" in the General Conditions in its entirety and insert the following in its place:

"Sections included under Division D and Division E of the Contract Documents."

SC-1.01

Delete the definition 1.01 A.44 entitled "Substantial Completion" in the General Conditions in its entirety and add the following in its place:

"The Work (or a specified part thereof) required by the Contract has been completed except for work (or a specified part thereof) having a Contract Price of less than one percent of the then adjusted total contract price, or substantially all of the Work (or a specified part thereof) has been completed and opened to Owner's use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work (or a specified part thereof) required by the Contract."

ARTICLE 2. PRELIMINARY MATTERS

SC-2.01 Delivery of Bonds and Evidence of Insurance

Delete paragraph 2.01B of the General Conditions in its entirety and insert the following in its place:

B. Evidence of Insurance: Before any work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates of insurance (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with the requirements of Article 5.

SC-2.02 Copies of Documents

Delete Paragraph 2.02.A in its entirety and insert the following in its place:

A. Owner shall furnish Contractor up to 6 printed or hard copies of the Drawings and Project Manual and one set in electronic format. Additional printed copies will be furnished upon request at the cost of reproduction.

SC-2.03 Commencement of Contract Times; Notice to Proceed:

Delete paragraph 2.03A of the General Conditions in its entirety and insert the following in its place:

A. The Contract Time will commence to run on the thirtieth day following the effective date of the Agreement, or if a Notice to Proceed is issued, the Contract Time will commence to run on the date of the Notice to Proceed.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01 Intent:

Add a new paragraph immediately after paragraph 3.01A of the General Conditions which is to read as follows:

- 1. Each and every provision of law and clause required by law to be inserted in the Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though they were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.
- 2. Sections of Division I General Requirements govern the execution of the work for other sections of the specifications.

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

SC-4.02 Subsurface and Physical Conditions:

Delete paragraph 4.02A of the General Conditions in its entirety and insert the following in its place:

- A. Reports and Drawings: In the preparation of Drawings and Specifications, Engineer or Engineer's Consultants have relied upon:
 - 1. Data obtained from subsurface investigations made at the site in the form of test borings. Such data is in the form of boring logs which are included in Appendix A to the Specifications. The locations of the test borings are indicated on the Drawings.

SC-4.06 Hazardous Environmental Conditions at Site:

Delete Paragraph 4.06.G and add the following new paragraph 4.06.G immediately after Paragraph 4.06.F:

G. To the fullest extent permitted by Laws and Regulations, Owner shall release Contractor, Subcontractors, and Engineer, and officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Conditions: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall constitute an indemnity of obligation.

ARTICLE 5. BONDS AND INSURANCE

SC-5.02 Licensed Sureties and Insurers:

Insert the following paragraphs at the end of Paragraph 5.02.A.:

B. The insurance policies and surety bonds required to be provided by the Contractor shall be written by a company or companies licensed by the State of New Hampshire which company or companies shall have not less than an A rating and a Class XV financial status as reported in the latest edition of Best's Insurance Guide. In addition all carriers are subject to approval by the OWNER.

C. The CONTRACTOR shall name the OWNER and Underwood Engineers, Inc. as an Additional Insured on a primary and non-contributory basis to all polices except Works Compensation and Professional Liability.

SC-5.03 Certificates of Insurance:

Delete paragraph 5.03B of the General Conditions.

SC-5.04 Contractor's Insurance:

Add the following new paragraph immediately after Paragraph 5.04.B.:

- C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
 - 1. Worker's Compensation, and related coverage under Paragraphs 5.04.A.1 and 5.04.A.2 of the General Conditions:

a.	State:	Statutory
b.	Applicable Federal	
	(e.g., Longshoreman's):	Statutory

- 2. Contractor's General Liability under Paragraphs 5.04.A.3 through 5.04.A.6 of the General Conditions which shall include completed operations and product liability coverage's and eliminate the exclusion with respect to property under the care, custody, and control of Contractor or provide equivalent coverage under Builders Risk:
 - a. General Aggregate including per project aggregate endorsement: (Except Products-Completed Operations): \$2,000,000
 - b. Products-Completed Operations Aggregate: \$2,000,000
 - c. Each Occurrence
 (Bodily Injury and Property Damage): \$ 2,000,000
 Property Damage liability insurance shall include Collapse and Underground coverages
 - d. If blasting is to be used, include explosion coverage. Occurrence: \$2,000,000 Aggregate: \$2,000,000
- 3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
 - 1. Combined Single Limit for bodily injury
and property damage:\$ 2,000,000

4. The Contractual Liability coverage required by Paragraph 5.04.B.3 of the General Conditions shall provide coverage for not less than the following amounts:

a.	Bodily Injury:	
	Each Accident	\$ 2,000,000
	Annual Aggregate	\$ 2,000,000
b.	Property Damage:	
	Each Accident	\$ 2,000,000
	Annual Aggregate	\$ 2,000,000

- 5. Pollution Liability Coverage: Not Used.
- 6. Coverage amounts may be satisfied by excess or umbrella policies provided Owner is satisfied as to the form of coverage.
- 7. Owner shall be listed as an additional insured on all liability policies. The City of Portsmouth shall be named as additional insured as follows:

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

SC-5.06 Property Insurance:

Delete Paragraph 5.06 in its entirety and insert the following in its place:

A. Owner will maintain an Installation Floater for its interest in the Work. Owner's policy is available for review. Contractor and subcontractors shall be responsible for insuring their own interests in the event of loss.

SC-5.07

Delete Section 5.07 in its entirety.

SC-5.08

Delete section 5.08 in its entirety.

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

SC-6.01 Supervision and Superintendance

Delete paragraph 6.01B of the General Conditions in its entirety and replace with the following:

B. At the site of the Work the CONTRACTOR shall employ a full-time construction superintendent or foreman who shall have full authority to act for the CONTRACTOR. It is understood that such representative shall be acceptable to the ENGINEER and shall be one who will be continued in the capacity for the particular job involved unless the representative ceases to be on the CONTRACTOR's payroll. If at any time during the Work the representative is deemed by the ENGINEER to be no longer acceptable, the representative shall be promptly replaced by the CONTRACTOR. All communications to the superintendent or foreman shall be as binding as if given to the CONTRACTOR.

SC-6.04 Progress Schedule

Add the following paragraph after paragraph 6.04A.2 of the General Conditions:

B. The CONTRACTOR's resident superintendent shall attend monthly progress meetings at the site of the work with the ENGINEER and others as appropriate to review schedule status and such other pertinent subjects as may be listed on the agenda by the ENGINEER.

SC-6.05 Substitutes and "Or Equals":

Add the following new paragraphs immediately after Paragraph 6.05.F.:

1. When a substitute item of material or equipment is proposed by Contractor and accepted by Engineer, and the substitution will require a change in any of the Contract Documents to adapt the design to the proposed substitute, Contractor shall notify Engineer of the changes and be responsible for the costs involved to revise the design and to make modifications or changes to the construction, including the costs associated with the Work of other contractors due to such changes in design or space requirements.

a. Redesign and drawing revisions will be prepared by Engineer and Contractor shall reimburse Owner for charges of Engineer for redesign and drawing preparation.

b. Reimbursement of Engineer shall be based on Engineer's direct labor costs, indirect labor costs, profit on the total labor, and any direct non-labor expenses such as travel or per diem.

SC-6.06 Concerning Subcontractor's, Suppliers, and Others:

Renumber subparagraph 6.06F to 6.06G and subparagraph 6.06G to 6.06H and add new subparagraph as follows:

F. Owner or Engineer may furnish to any such Subcontractor, Supplier, or other person or organization, to the extent practicable, information about amounts paid to Contractor in accordance with Contractor's Applications for Payment on account of the particular Subcontractor's, Suppliers, other person's, or other organization's Work.

SC-6.08 Permits:

Delete the last sentence in Paragraph 6.08.A. in its entirety and replace with the following:

Unless otherwise specified in the General Requirements or Specifications, Contractor shall pay all charges of utility owners for connections for providing permanent service to the Work.

SC-6.16 Emergencies:

Add the following new paragraph immediately after Paragraph 6.16.A.:

B. In emergencies affecting the safety or protection of persons or property or maintenance of temporary construction at the Site or adjacent thereto, and Contractor cannot be reached, Owner may act to attempt to prevent threatened damage, injury, or loss. Owner will give Contractor and Engineer prompt written notice of such action and the cost of the correction or remedy shall be charged against Contractor. A Change Order will be issued to document the change in Contract Price.

SC-6.17 Shop Drawings and Samples:

F. samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.

G. After Engineer has reviewed and approved a Shop Drawing or Sample, Contractor shall provide the material or equipment approved. Engineer will not review subsequent submittals of a different manufacturer or Supplier unless Contractor provides sufficient information to Engineer that the approved material or equipment is unavailable, time of delivery will delay the construction progress but not as a result of Contractor's failure to timely pursue the Work or to coordinate various activities properly, or Owner requests a different manufacturer or Supplier.

SC-6.19 Contractor's General Warranty and Guarantee

Add the following new paragraph to Article 6.19, of the General Conditions:

D. The Contractor warrants the Work for a period of one year from substantial completion of the entire project or a part thereof, unless a longer warranty is specified for a particular item or element of the project, in which case the longer warranty period shall govern.

ARTICLE 7. OTHER WORK AT THE SITE

SC-7.04 Damage to the Work or Properties:

Add the following new paragraph 7.04 at the end of Article 7 of the General Conditions:

A. Should Contractor cause damage to the work or property of any separate contractor at the site, or should any claim arising out of Contractor's performance of the Work at the site be made by any separate contractor against Contractor, Owner, Engineer, Engineer's Consultants, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, and Engineer's Consultants, harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals, and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, or Engineer's Consultants, to the extent based on a claim arising out of the Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of Work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer or Engineer's Consultants, or permit any action against any of

them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or Engineer's Consultants, on such damage or claim. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and Engineer's Consultants, for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer, or Engineer's Consultant, for activities that are their respective responsibilities.

ARTICLE 8. OWNER'S RESPONSIBILITIES

SC-8.02 Replacement of Engineer

Delete the phrase "to whom the CONTRACTOR makes no reasonable objection."

SC-8.09 Limitations on Owner's Responsibilities

Insert the following after the first sentence:

However, the OWNER shall have the right to direct the CONTRACTOR to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto.

ARTICLE 9. ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.01 Owner's Representative

Add a new paragraph 9.01B after paragraph 9.01A of the General Conditions, which is to read as follows:

A. Nothing contained in the Contract Documents shall be construed to create a contractual relationship of any kind (1) between the ENGINEER and CONTRACTOR,(2) between the OWNER and a Subcontractor or Subcontractors, or (3) between any person or entities other than the OWNER and CONTRACTOR. The ENGINEER shall, however, be entitled to performance and enforcement of obligations under the CONTRACT DOCUMENTS intended to facilitate performance of the ENGINEER'S duties.

SC-9.10 Compliance with Safety Program:

Add the following new paragraph immediately after Paragraph 9.10.A.:

In the event Engineer and/or Owner determines that Contractor's safety plans, programs, and procedures do not provide adequate protection for Engineer and/or Owner, Engineer and/or Owner may direct its employees to leave the Project Site or implement additional safeguards for Engineer's protection. If taken, these actions will be in furtherance of Engineer and/or Owner's responsibility to its own employees only, and Engineer and/or Owner will not assume any responsibility for protection of any other persons affected by the Work. In the event Engineer and/or Owner observes situations which appear to have potential for immediate and serious injury to persons, Engineer may warn the persons who appear to be affected by such situations. Such warnings, if issued, shall be given based on general humanitarian concerns, and Engineer and/or Owner will not, by the issuance of any such warning, assume any responsibility to issue future warnings or any general responsibility for protection of persons affected by the Work.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

SC-10.01 Authorized Changes in the Work:

Add the following new subparagraph immediately after Paragraph 10.01.B.:

H. By submission of a Claim, Contractor certifies that the claim is made in good faith, that the supporting data are accurate and complete to the best of Contractor's knowledge and belief, and that the amount or time requested accurately reflects the Contract adjustment for which Contractor believes Owner is liable.

SC-10.03 Execution of Change Orders:

Delete Paragraph 10.03.A.3 in its entirety and replace with the following:

Changes in the Contract Price or Contract Times, and agreed to by owner, which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

SC-10.05 Claims:

Delete paragraph 10.05.A, 10.05.B, 10.05.C and 10.05.E in there entirely and replace with the following:

- Engineer's Decision Required: All Contractor claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by the Contractor of any rights or remedies the Contractor may otherwise have under the Contract Documents or by Laws and Regulations in respect of such claims.
- Notice: Written notice stating the general nature of each Claim shall be delivered by the Contractor to Engineer and Owner promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the Contractor. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the Owner within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be accompanied by Contractor's written statement that the adjustment claimed is the entire adjustment to which the Contractor believes it is entitled as a result of said event.
- Engineer's Action: Engineer will review each Claim and, within 30 days after receipt shall take one of the following actions in writing:
 - deny the Claim in whole or in part;
 - approve the Claim; or
 - notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of Claim, such notice shall be deemed a denial.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon the Contractor, unless the Contractor invokes the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

ARTICLE 11. COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-11.01 Cost of the Work:

In the second sentence of Paragraph 11.01.A.1, delete the word "superintendents."

SC-11.01 Cost of the Work:

In Paragraph 11.01.B.1 add "superintendents" after "engineers" in the first sentence.

SC-11.02 Allowances:

In Paragraph 11.02.B.1.b, add "Except where Contractor's costs are allowed in the description of the bid item in Section 01025 - Measurement and Payment," prior to the first sentence.

SC-11.03 Unit Price Work:

Delete Paragraph 11.03.D in its entirety and insert the following in its place:

- The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
 - If the Bid price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement.
 - If there is no corresponding adjustment with respect to any other item of Work.
 - If Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01 Change of Contract Price:

Delete paragraph 12.01.C.1 in its entirety.

SC-12.02 Change of Contract Times:

Delete Paragraph 12.02.A in its entirety and replace with the following:

A. The Contract Times may only be changed by a Change Order. Contractor's Claim for an adjustment in the Contract Times shall be based on written notice submitted in accordance with the provisions of Paragraph 10.05.

SC-12.04 Liquidated Damages

Add new paragraph F. immediately after paragraph 12.03E of the General Conditions to read as follows:

F. If the Contractor shall fail to achieve Substantial Completion and/or Final Completion within the times stipulated in the Contract, it shall be liable to pay the Owner the daily amount as stipulated in the Contract not as a penalty, but as fixed and agreed upon damages for breach of contract. The said amount is fixed and agreed upon because of the difficulty of ascertaining the Owner's actual damages. It is mutually understood that the amount is a reasonable approximation or estimate thereof as of the date of the Contract. The said amount may be withheld from periodic or final payments due to the Contractor, in addition to retainage and other back charges.

ARTICLE 14. PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02 Progress Payments:

Delete paragraph 14.02.A.3 of the General Conditions in its entirety and replace with the following:

3. Partial payments will be made on a monthly basis during the contract period. From the total amount ascertained as payable, an amount equivalent to ten percent (10%) of the total contract value will be deducted and retained by the Owner up until fifty percent (50%) completion of the work. Five Percent (5%) of the total contract value will be deducted and retained by the Owner up until substantial completion. At which point the Contractor can request a reduction down to two percent (2%) in accordance with Final Payment.

Add new paragraphs immediately after paragraph 14.02A.3 of the General Conditions to read as follows:

- 4. Equipment accepted for delivery at the site or at a local bonded warehouse and included in progress estimates in advance of actual requirement will be subject to all conditions stated below.
- 5. Materials and equipment will not be included in progress estimates until the following requirements have been fulfilled.
 - a. The Contractor must present an invoice to the Engineer for each item of equipment he is requesting payment for. The invoice must be broken down to show the costs for the actual equipment, and reasonable costs for O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and any other services required by Contract.
 - b. Sufficient monies have been allocated in the payment requisition line items to cover all of the costs listed in "a" above, plus the costs of physically installing the equipment.
 - c. The equipment has been submitted and accepted for use in this Project.
 - d. The equipment is acceptably stored and protected. Storage in a bonded warehouse will require proof of bonding, and insurance coverage specifically for the item being stored.
 - e. The manufacturer's short and/or long-term storage requirements have been received by the Engineer, prior to payment.

- f. The Contractor has established a program to implement the manufacturer's required storage procedures. Said program to consist of at the very least a written schedule of daily, weekly, monthly, etc., routine maintenance requirements for each piece of equipment. A copy of this schedule to be presented to the Engineer prior to each requisition submittal, signed by the Contractor, stating that the required maintenance has been performed.
- g. Signed, notarized Title Transfers, format to be furnished by the Engineer, must be furnished for each item of equipment.
- 6. When the above have been complied with to the satisfaction of the Engineer, payment will be authorized for the full invoice values of the item of equipment, less normal retainage and less all costs for O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and installation.

SC-14.02 Progress Payments:

Amend Paragraph 14.02.C.1. by striking out the words "Ten days" and inserting the words "Thirty days" in their place.

SC-14.02 Progress Payments:

Delete paragraph 14.02.D.1 in its entirety and replace with the following:

- 1. Owner may refuse to make payment of the full amount recommended by Engineer for reasons that may without limitation include:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Owner requires additional supporting documentation of the work;
 - c. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

- d. there are other items entitling Owner to a set-off against the amount recommended; or
- e. Owner has a reasonable belief of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

SC-14.02 Progress Payments:

Delete paragraph 14.02.D.3 in its entirety.

ARTICLE 16. DISPUTE RESOLUTION

SC-16.01 Methods and Procedures:

Delete Paragraphs 16.01.A, B, and C. in their entirety and replace with the following:

- A. Either Owner or Contractor may request mediation of any Claim or dispute. The parties will endeavor to identify a mutually agreeable mediator and share the costs for such mediation equally. Neither party shall be required to agree to mediation.
- B. Owner and Contractor shall participate in any mediation process in good faith. If held, the process shall be concluded within 60 days of filing of the request.

ARTICLE 17. MISCELLANEOUS

SC-17.06 Headings

Delete paragraph 17.06 in its entirety and replace with the following:

A. The headings or titles of any article, paragraph, subparagraph, section, subsection, or part of the Contract Documents shall not be deemed to limit or restrict the article, paragraph, section, or part.

SC-17.07 Legal Address of Contractor

Add new paragraph immediately after paragraph 17.06 of the General Conditions as follows:

17.07 Legal Address of Contractor:

A. Contractor's business address and his office at or near the site of the Work are both hereby designated as places to which communications shall be delivered. The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the Contractor's business address in a post office box regularly maintained by the Post Office Department or the delivery at either designated address of any letter, notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon Contractor, and the date of such service shall be the date of receipt. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor and delivered to Engineer. Service of any notice, letter, or other communication upon the Contractor personally shall likewise be deemed sufficient service.

Insert the following Article immediately after Paragraph 17.01 of the General Conditions as follows:

ARTICLE 18. OSHA CONSTRUCTION SAFETY PROGRAM

18.01 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.

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

18.03 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.

END OF SECTION

D. NHDOT STANDARD SPECIFICATIONS AMENDMENTS AND SPECIAL PROVISIONS

NHDOT TECHNICAL SPECIFICATIONS, AMENDMENTS & SPECIAL PROVISIONS

Work itemized with NHDOT item numbers shall be in accordance with current edition of the State of New Hampshire, Department of Transportation (NHDOT) Standard Specifications for Road and Bridge Construction, Amendments to Standard Specifications, Supplemental Specifications, Special Attentions and Special Provisions included herein. Although not included within the Project Manual, the Standard Specifications shall be considered part of the Contract Documents. The Contractor shall comply with these Specifications. In the case where two specifications for one installation are provided the more stringent specifications apply.

A complete set of NHDOT Standard Specifications for Road and Bridge Construction may be purchased from: NHDOT, Records Section, 1 Hazen Drive, P.O. Box 483, Concord, NH 03302-0483, Phone No.: 603-271-3514, or viewed online at the NHDOT website.

AMENDMENTS TO NHDOT SPECIFICATIONS

- Sections 100 to 109 General
- Section 201 Clearing and Grubbing
- Section 203 Excavation and Embankment
- Section 206 Structure Excavation for pipes and other minor structures
- Section 304 Aggregate Base Coarse
- Section 401 Plant Mix Pavements General
- Section 403 Hot Bituminous Pavement
- Section 603 Culverts and Storm Drains
- Section 604 Catch Basins, Drop Inlets, and Manholes
- Section 605 Underdrains
- Section 618 Uniformed Officers and Flaggers
- Section 619 Maintenance of Traffic
- Section 645 Erosion Control
- Section 646 Turf Establishment
- Section 692 Mobilization

SPECIAL PROVISIONS

110 - Prosecution of Work
611.41420 - Casing Pipe for Non-Potable Water System
703.1 - Graded Coarse Aggregate
912.0 - R&R Landscaping
915.0 - Calcium Chloride for Dust Control

- 1008.1 Utility Relocation
- 1008.2 Alternation and Additions as Needed (Soil Testing Allowance)
- 1010.11 High Rate Biofiltration Stormwater Treatment Units
- 1010.12 Flow Through Stormwater Treatment Unit

SPECIAL ATTENTIONS

1010.15 – Fuel Adjustment 1010.20 – Asphalt Cement Adjustment

STANDARD SPECIFICATIONS

The Standard Specifications for Road and Bridge Construction of the State of New Hampshire Department of Transportation and any Addenda shall apply to all technical and measurement aspects of this project only.

However, the Standard Specifications for Road and Bridge Construction of the State of New Hampshire Department of Transportation and any Addenda shall <u>NOT</u> apply to General Requirements, Control of Work, Temporary Facilities, Payment, Insurance Requirements, etc. with the exception that pavement escalation will be allowed in accordance with the NHDOT standard specifications.

Division 100 1 of 4 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO DIVISION 100 - GENERAL PROVISIONS

The NHDOT specifications for the purposes of this project are hereby amended as follows:

General:

Reference made to the "<u>Department</u>" or "<u>Bureau</u>" or "<u>State</u>" or "<u>District Engineer</u>" shall mean "<u>City of Portsmouth, their Agents or Engineer</u>."

<u>Section 100 – General Provisions</u>

Delete the following sections in entirety:

- Section 102-Bidding Requirements and Conditions
- Section 103-Award and Execution of Contract

<u>Section 104 – Scope of Work</u>

Amend 104.03.B.1 – Replace the last sentence of the third paragraph with the following:

Additional work caused by the suspension, for reasons beyond the Contractor's control, in accordance with 619.5.4 will be paid for at Contract prices or as provided for in the General Conditions and Supplementary Conditions of these Contract Documents.

Replace 104.03.C with the following:

104.03.C Maintenance Directed by the Engineer. If the Engineer directs special maintenance for the benefit of the traveling public not otherwise included in the Contract, payment will be based on Contract unit prices or as provided in the General Conditions of these Contract Documents. The Engineer will determine the work to be classed as special maintenance.

Amend 104.04 – **Delete** the words "for loading by the Contractor onto State owned vehicles as directed" from the second sentence of the fifth paragraph.

- Amend 104.04 **Replace** the second sentence of the last paragraph with the following: "Compensation for such removal, if any, shall be determined in accordance with the General Conditions of this Contract."
- Amend 104.06 Delete the second sentence of the second paragraph.

<u>Section 105 – Control of the Work</u>

Amend 105.06 – **Replace** the last sentence of the last paragraph to read as follows:

"If the Contractor believes that he is entitled to compensation or a time extension based on the Engineer's determination or arrangements, then the Contractor shall proceed in accordance with the General Conditions of these Contract Documents."

Division 100 2 of 4 Corporate Drive Reconstruction Portsmouth, NH

Amend 105.10 – Replace the third sentence of the second paragraph to read as follows:

"Should the Work prove acceptable, the uncovering, removing, and the replacing of the covering or making good of the parts removed will be paid as provided for in the General Conditions of these Contract Documents."

<u>Section 106 – Control of the Material</u>

Amend 106.06 – **Replace** the second paragraph to read as follows:

"Materials shall be stored to facilitate prompt inspection and will be subject to inspection and retesting before incorporation in the Work."

Amend 106.10 – Delete the last two sentences from this section.

Section 107 – Legal Relations and Responsibility to Public

Amend 107.09.1 -Replace the last sentence of the first paragraph and the last sentence of the second paragraph with the following:

"Compensation and time extensions for this work shall be determined in accordance with the General Conditions and Supplementary General Conditions of these Contract Documents."

Amend 107.17 – **Replace** the second sentence of the last paragraph:

"Work required to dispose of these materials shall be performed under Contract item(s), or Supplemental Agreement; compensation and time adjustment shall be as provided for in General Conditions of these Contract Documents."

<u>Section 108 – Prosecution and Progress</u>

Amend 108.03 - Delete the fourth paragraph and replace with:

"Progress schedule submissions shall include a paper copy and an electronic copy in .pdf format."

Amend 108.03.A.1.1 – Delete the last sentence of the first paragraph and replace with:

"The Contractor is not entitled to a time extension or compensation for the delay except as may be explicitly allowed by the contract documents"

Amend 108.03.A.1.4 – **Replace** the first sentence with the following:

"Submit a schedule update to the Engineer bi-weekly or as requested by the Owner based on the progression of work."

Division 100 3 of 4 Corporate Drive Reconstruction Portsmouth, NH

Add 108.03.A.1.6 – **Insert** new paragraph:

108.03. A.1.6 "The Contractor shall provide a two-week look-ahead at weekly job meetings, which identify future work, planning and progress of the Contract."

Amend 108.03.A.2 – Delete paragraph in its entirety and replace with:

108.03. A.2 "The Contractor shall develop a CPM schedule in a format that is acceptable to the Owner and shall perform all Work required to ensure that the schedule accurately reflects the planned schedule and progress."

Delete 108.03.A.2.1 in its entirety.

Amend 108.03.A.2.2 – **Delete** "Within 30 calendar days after providing the initial bar chart," from the 1^{st} sentence of the paragraph:

Amend 108.03.A.2.2.3 – Replace "monthly" with "bi-weekly" in the first sentence.

Amend 108.03.A.3.2 – Replace "monthly" with "weekly" in the second sentence.

Amend 108.03.C – Delete "flaggers and" from third sentence.

Delete the 4th sentence.

Amend 108.04 – **Delete** the second sentence of the second paragraph and **replace** with the following:

"Whenever a holiday is observed the Contractor shall cease operations and shall have left the site by noon (12pm) on the working day prior. For Monday holidays, operations shall cease, and the Contractor have left the site by noon (12pm) on the Friday prior."

<u>Section 109 – Measurement and Payment</u>

Amend 109.09 – **Delete** the section in its entirety and **replace** with:

Replace Section 109.09 with the following:

109.09 The Prime Contractor shall pay all Subcontractors for the work performed no later than 21 calendar days from the date the Prime Contractor received payment from the Owner for said work, including materials in the progress payments paid for in the progress payments. Subcontractors are required to pay their Subcontractors and/or material suppliers, within 21 calendar days from the date they receive payment for satisfactory work performed or supplies received. This Prompt Pay requirement shall be made part of all subcontracts and agreements.

Division 100 4 of 4 Corporate Drive Reconstruction Portsmouth, NH

If the Prime Contractor believes that any portion of the payment should be withheld from the Subcontractor, the Prime Contractor shall notify the Owner's Contract Administrator in writing, prior to the estimate being processed. The Owner may withhold payment for the portion of work in dispute pending resolution.

This prompt payment provision is a requirement of 49 CFR 26.29 and does not confer third party beneficiary right or other direct right to a Subcontractor against the Owner. This provision applies to both DBE and non-DBE Subcontractors.

Satisfactory Work Performed: Satisfactory Work performed shall be defined for the purposes of this prompt payment provision as:

- 1. Upon review, the Engineer finds the work completed in accordance with the contract, plans and specifications, and;
- 2. Required paperwork, for Progress and Partial payments, including material certifications and payrolls, has been received.

The determination of whether work meets the standards set forth above is the responsibility of the Engineer. If the Subcontractor becomes insolvent after it satisfactorily performs work as defined above but before payment is due, the obligation to pay is not extinguished. (Payment may have to be made to the bankruptcy trustee or to an escrow account for the benefit of creditors.)

The Prime Contractor must include, in all subcontract agreements, notices to Subcontractors of their right to prompt payment, and of the Owner's policy prohibiting the Prime Contractor from holding retainage from Subcontractors under 49 CFR 26.29.

Failure of a Prime Contractor or a Subcontractor to comply with these prompt payment provisions may result in sanctions.

Non-Payment Claims: All notifications of failure to meet prompt payment provisions shall be referred by Subcontractors, in writing, to the Owner with a copy supplied to the respective Contract Administrator.

Payment Certifications: The Prime Contractor or any Subcontractor who receives payment for work and/or materials (specifically supplied to the project more than \$10,000) shall submit a "Monthly Prompt Pay Certification," OFC Form 18, to the Owner no later than the 10th calendar day of each month.

Note: Where two specifications may apply, Amendments to NHDOT specifications and Special Provisions will take precedent over NHDOT Standard Specifications. Where NHDOT specifications and Amendments are different from Details or Specifications specific to the project, the more stringent specifications shall apply.
Section 201 1 of 2 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 201 – Clearing and Grubbing

Add 1.4 (f)

1.4 (f) Multiple trunks: trees with multiple trunks, but one (1) root system shall be considered as one (1) tree. Size will be determined by (c) and (d) of this subsection and dimensionally measured by the largest trunk.

Construction Requirements

Add Paragraph 3.3.1:

"3.3.1 Lateral limits for trimming of trees shall be as provided in 3.1".

Revise section 3.1.2, to read:

3.1.2 All trees ordered cut shall be disposed of by the Contractor unless the wood is requested by the Property Owner, whereas the Contractor shall cut and stack (in 4' lengths) at the edge of the property.

Method of Measurement

Add section 4.7:

4.7 Restoration of any disturbance or damage to surrounding property resulting from stump removal will not be measured for payment.

Basis of Payment

Add 5.2.5

5.2.5 Restoration of any disturbed or damaged area or property resulting from stump removal shall be subsidiary to the unit item of tree removal or stump removal.

Delete 5.5 and **replace** with:

5.5 Trimming of tress will be paid based on invoices (without mark-up) as submitted from the Contractor's Tree Professional

Section 201 2 of 2 Corporate Drive Reconstruction Portsmouth, NH

Pay Items and Units

Add the following item:

201.21	Removing small trees (where directed)	Ea.
201.22	Removing large trees (where directed)	Ea.
201.52	Trimming of trees	Allowance

Section 203 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 203 – Excavation and Embankment

Classification of Material

Amend 2.2 to Read:

2.2 Rock excavation shall consist of all solid rock that cannot be removed without blasting, ripping or hammering with hoe ram. It shall also consist of boulders, masonry structures and concrete slabs when found to be greater than 6 inches in thickness <u>and</u> 2 cubic yards in volume.

Section 206 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 206 – Structure Excavation for Pipes and Other Minor Structures

Classification of Materials

Delete and **Replace** Paragraph 2.2 with the following:

2.2 Rock structure excavation shall consist of all solid rock that can be removed only by blasting or ripping. It shall also consist of boulders and parts of concrete or masonry structures when found to measure 2 cubic yards or more.

Section 304 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 304 – Aggregate Base Course

Materials

Delete: Paragraph 2.3 and **replace** with the following:

"2.3 Sand. The maximum size of any stone or fragment shall not exceed 4 in."

Modify Table 1 – Base Course Materials required gradation for Item 304.4 – Crushed Stone Fine as follows:

Sieve Size	Percent Passing
2"	100
1.5"	85-100
3/4"	45-75
No. 4	10-45
No. 200 (in sand portion)	0-12
No. 200 (in total sample)	

Section 401 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 401 – Plant Mix Pavements - General

Construction Requirements

Add the following sentence to 3.10.11 - Generals:

"The top of manholes and other castings shall be sprayed with kerosene or other product before the paver passed over the casting. The top of the casting shall be clean of asphalt at the completion of paving."

Amend 401.3.13.3 to Read:

3.13.3 Placing of the course shall be as continuous as possible, keeping the number of transverse joints at a minimum while still being able to make a hot longitudinal joint.

Section 403 1 of 3 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

<u>Section 403 – Hot Bituminous Pavement</u>

Description

Add the following to the end of the last sentence of part 1.1. "or temporary. Sidewalks and walkways shall be as specified in section 608"

Amend 1.1.1 to Read:

1.1.1 Hand method shall include only the paving of raised islands, slopes, cattle passes, areas between rails at railroad crossings, driveways, driveway aprons, curb patch between concrete barrier and pavement, and trench repairs.

Amend 1.1.2 to Read:

1.1.2 Machine method shall include all paving operations not classified as hand method. Machine method shall also include those driveways and other areas completed with the use of a paver and specifically identified as machine method.

Add section 1.4

1.4 Prior to the start of any paving operations a mandatory pre-paving meeting will be conducted.

Materials

Amend section 2.2 to read as follows:

2.2 Temporary bituminous pavement shall conform to 401, Table 1. Thickness shall be 2" minimum or as ordered by the Engineer.

Add section 2.3

- **2.3** Job mix formula for bituminous pavement materials shall be as follows:
 - a. Temporary bituminous pavement material shall be 3/4" base course gradation as specified in NHDOT Standard Specifications, Section 401.
 - b. Permanent base course pavement material shall be 3/4" base course gradation as specified in NHDOT Standard Specifications, Section 401.
 - c. Permanent binder course pavement material, including driveways, shall be 3/4" binder course gradation as specified in NHDOT Standard Specifications, Section 401.
 - d. Permanent wearing course pavement material shall be 1/2" wearing course gradation as specified in NHDOT Standard Specifications, Section 401.

Section 403 2 of 3 Corporate Drive Reconstruction Portsmouth, NH

- e. Bituminous driveway wearing course material shall be 3/8" wearing course gradation as specified in NHDOT Standard Specifications, Section 401.
- f. Bituminous waterway material shall be 1/2" wearing course gradation as specified in NHDOT Standard Specifications, Section 401.
- g. Bituminous pavement (for trench repairs) shall have a minimum total thickness of five inches (5"), or match existing thickness, whichever is greater or as shown on the Contract Drawings. Trench pavement shall be 3.5" of 3/4" binder course and 1.5" of 1/2" wearing course or as shown on the Contract Drawings.

Construction Requirements

Add section 3.5

3.5 Temporary bituminous pavement may not be required for all trenches and structures but shall only be installed when so directed by the Engineer. See prosecution of work (110) for intent.

Add section 3.6

3.6 Temporary pavement shall be repaired as necessary to maintain the surface of the pavement until replaced by the permanent pavement. If points of settlement or holes appear in the temporary pavement, the Contractor shall repair the same within 24 hours without any further compensation.

Add section 3.7

3.7 Permanent bituminous pavement shall be installed in multiple lifts of wearing, binder and base course mixes as indicated in the Contract Drawings or directed by the Engineer to achieve the total thickness of pavement as indicated in the Contract Drawings. Permanent bituminous pavement (for trench repairs) with a total thickness of four inches (4") shall be installed with a base lift of 2.5" of 3/4" binder course and a top lift of 1.5" of 1/2" wearing course unless otherwise indicated on the Contract Drawings or directed.

Methods of Measurement

Add section 4.2

4.2 Temporary or permanent bituminous pavement shall be measured by the ton with the width of trench limited to that shown on the details shown on the Drawings.

Section 403 3 of 3 Corporate Drive Reconstruction Portsmouth, NH

Basis of Payment

Amend 5.4 to Read:

5.4 The accepted quantity of temporary or permanent bituminous pavement will be paid for at the contract unit price per ton. Maintenance and repair of temporary pavement under section 3.6 shall be subsidiary to the item.

Add section 5.5 as follows:

5.5 Pavement Joint Adhesive shall be included in the price for hot bituminous pavement and no additional compensation will be allowed.

Section 603 1 of 2 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

<u>Section 603 – Culverts and Storm Drains</u>

Add the following paragraphs:

Description

1.2 Work shall also include constructing 6" PE drain laterals to each property and provide a 6" PE riser or a cast iron downspout boot as shown on the drawings or where directed.

Materials

2.13 Cast Iron downspout boot for PE drain laterals shall be "A Series – Angular Downspout Boots" as manufactured by J.R. Hoe and Sons, Inc. or approved equal.

Construction Requirements

3.1.3.1 Refer to design drawings for installation. Where a conflict exists between Figure 1 and the design drawings the design drawings shall govern.

3.11 Cast Iron Downspout Boots for drain laterals

3.11.1 Cast iron downspout boots shall be secured to the foundation using stainless steel bolts and anchoring inserts sized as specified by the manufacturer.

3.11.2 Provide PE bends and fittings as required to connect 6" PE pipe at the required angle to the downspout boot with a flexible coupling.

Method of Measurement

Delete section 603.4.3 and replace with the following:

4.3 "Video inspection (where ordered) will be measured by the linear foot to the nearest foot based on the actual length."

Add the following paragraphs:

4.4 Cast iron downspout boots will be measured per each installed complete and in place where shown on the drawings or as directed.

4.5 PE drain lateral risers will be subsidiary to item 603.82206 and will not be measured for additional payment

Section 603 2 of 2 Corporate Drive Reconstruction Portsmouth, NH

Basis of Payment

5.9 Cast Iron downspouts will be paid for at the contract unit price per each installed and in place including common structure excavation to expose and prep the existing foundation, mounting hardware (stainless steel inserts and bolts), all fittings and couplings required to connect to 6" PE pipe as shown on the drawings, backfill, compaction, and any property restoration not paid for under separate items.

5.10 Management of surplus soils for use as trench backfill to replace brick and concrete removed from roadway excavations will be paid under Item 1.15B.

Amend section 603.5.1 by replacing "specified in 206.4.1" in the first sentence with "required to complete the installation as indicated on the plans."

Replace Section 5.1.3 with the following:

5.1.3 Granular backfill generated from the project or other locations designated by the Owner will be subsidiary to backfill operations.

Delete section 603.5.3 and replace with the following:

5.3 "Where deficient work has been determined through video inspection, the Contractor shall absorb all costs associated with video inspection. Where work has been determined to be acceptable costs for video shall be paid at the Contract unit price per linear foot and will include all required labor, equipment and materials."

Add section 603.5.3.1

5.3.1 Where an item does not exist for video inspection payment shall be in accordance with Section 109 based on Subcontractor invoicing or Contract labor hours and equipment rates.

Add section 603.5.3.2

5.3.2 Payment shall be considered full compensation for the work for video inspection whether or not the pipe is in service.

Amend section 603.5.8.1 by adding "No additional compensation shall be provided where additional suitable material is located within the project work area." after the last sentence.

Add the following pay items and units

603.31 Cast Iron Downspout Boots

Section 604 1 of 5 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 604 – Catch Basins, Drop Inlets, and Manholes

Materials

Amend 604.2.4 to read as follows:

2.4 All brick used for casting adjustment and invert tables shall be clay brick conforming to AASHTO M32 Grade SS. Maximum water absorption shall be 3%-4% during the five-hour boil test. The use of concrete brick will not be permitted.

Add the following after paragraph 2.7:

2.7.1 All castings provided for City of Portsmouth shall be certified Made in the USA

Amend 604.2.9 to read as follows:

2.9 Prefabricated adjustment rings are not allowed.

Add Section 604.2.11

2.11 All catch basin frames (single and double) installed at granite curbing locations shall be 3-flanged. All catch basin frames (single and double) installed with no granite curbing shall be 4-flanged.

Delete paragraph 2.9 and **replace** with the following:

2.9 Prefabricated adjustment rings will only be permitted on existing structures to remain which require adjustment to proposed grades.

2.9.1 Adjustment of castings on new structures shall be by brick and mortar.

Add the following paragraphs after paragraph 2.10:

2.11 Drain manhole covers shall be hinged, Ergo XL and manufactured by East Jordan Iron Works.

2.11.1 All hinged manhole covers shall be provided with cam lock mechanisms.

Section 604 2 of 5 Corporate Drive Reconstruction Portsmouth, NH

2.12 Catch Basin hoods (oil and debris separators) shall be "Snout" as manufactured by Best Management Products, "The Eliminator" as manufactured by Ground Water Rescue, Inc, or approved equal.

2.13 Curb inlet style catch basin grate shall be model R-3303 by Neenah Foundry or approved equal.

Construction Requirements

Amend 604.3.3 to Read:

3.3 When reconstruction or adjustment of existing structures is specified, the frames and grates or covers shall be removed, and the walls reconstructed as required. Reconstruction of the walls shall mean replacing the top section, if necessary, adding riser sections, replacing riser sections, removing riser sections, or adding/removing rows of barrel block as required to meet the proposed grades. The frames and grates or covers shall be cleaned and reset at the required elevation. Non-serviceable and non-conforming castings shall be replaced as directed.

Amend 604.3.3.1 to Read:

3.3.1 The use of prefabricated adjustment rings will not be allowed.

Add the following sections after 604.3.9

3.10 New frame & grates or frame & cover and frame adjustments shall include new red clay brick (subsidiary). Existing frame shall be cleaned prior to reset. Where elevation adjustment is specified, the existing brick shall be inspected for serviceability. Unserviceable brick shall be replaced.

3.10.1 Each brick for casting setting or adjustment is to be thoroughly wet just before laying and is to be completely embedded in mortar under its bottom, its side and its end at one operation. Care is to be taken to have every joint full of mortar and the outside is to be fully filled and the inside pointed. No brick work is to be laid in water and no water is to be allowed to rise on the work until it has set at least 24 hours. Do not plaster or mortar over brickwork inside the manholes.

3.10.2 Frames for manhole covers shall be set 1/8" below or flush with finish grade. Frames for catch basins shall be set 1/2" to 1" below finish grade. The Contractor shall ensure that the frame is set at the same cross slope and profile of the road. New pavement courses shall be luted around the rim to provide a smoothly transitioned depression.

3.11 Total adjustment of castings to proposed grades on new structure shall not exceed 12"

Section 604 3 of 5 Corporate Drive Reconstruction Portsmouth, NH

3.12 Field cores shall be completed where directed using equipment as required to provide a round core so that a new pipe can be connected to an existing catch basin or drain manhole. Penetrations cut by pipe saws will not be acceptable.

3.12.1 Field cores shall be sized and aligned to accept proposed pipe diameter at line and grade as specified on the drawings

3.12.2 Field Core penetrations shall include Kor-N-Seal boot for all pipes 18" diameter or less. For pipes greater than 18" diameter construct brick masonry to fit neatly between pipe and structure. Solidly parge space between pipe and structure with non-shrink grout

3.12.3 Complete modification to inverts as required so that water flows smoothly and hydraulically un-inhibited through the invert, subsidiary

3.13 Annular space between boot connector and pipe shall be grouted with non-shrink mortar.

3.14 Construct brick inverts inside drain manholes and sewer manholes using brick specified in paragraph 2.4 above. When approved by the City in advance, inverts for drain manholes may be concrete.

Method of Measurement

Delete paragraph 4.4 and **replace** with the following:

4.4 Catch basin hoods shall be measured per each installed and in place as shown on the drawings or directed.

Add the following paragraph:

4.5 Replacement of existing catch basin frame and grate with either a manhole frame and cover <u>or</u> curb inlet assembly will be measured as 1 vertical foot per each assembly installed.

4.6 Field cores completed of the type and size specified will be measured per each.

Section 604 4 of 5 Corporate Drive Reconstruction Portsmouth, NH

Basis of Payment

Delete paragraph 5.1 in its entirety and replace with the following:

5.1 The accepted quantities of catch basins, drop inlets, and drain manholes, which includes the necessary frames and grates or covers, of the type and diameter specified will be paid at the Contract unit price per each unit complete and in place, including sawed pavement, common structure excavation and setting to **binder** grade, bedding if required, backfill, removal of existing structures within the limit of excavation, and systems installed to pre-drain soils not paid for under separate items.

5.1.1 All rock structure excavation, any common structure excavation below the depth specified on the drawings, and excavation of unsuitable material below the bottom of each catch basin, drop inlet, and manhole will be paid under the respective Items 206.2

5.1.2 Adjustment of structures to final grade will be paid under 604.4. No extra allowance will be made for structures constructed in accordance with 3.4

5.1.3 Water repellant treatment for new drainage structures will be subsidiary

5.1.4 Construction of brick inverts in manholes (or removal and replacement of brick inverts) invert and replacement of the existing casting with new type including final adjustment of frames is subsidiary to manholes.

5.4 The accepted quantities of frames and grates or manhole covers will be paid for at the Contract unit complete in place, including setting to final grade and necessary brick adjustment (new or existing).

5.4.1 Removal and disposal of existing non-conforming or damaged units shall be subsidiary to this item.

Delete paragraph 5.5 and **replace** with the following:

5.5 Polyethylene liners installed in new catch basins and drop inlets will be subsidiary to those items. Polyethylene liners installed in existing structures, or where adjusting or modifying existing structures, will be paid at the contract unit price per each.

Add the following paragraph:

5.6 Accepted quantities for the replacement of existing catch basin frame and grates with new drain manhole frame and covers or curb inlet assemblies will be paid at the contract unit price per each complete and in place including common structure excavation to expose existing castings, removal and disposal of existing casting (or returning casting to the owner if requested), preparation of concrete for adjustment to grade as required,

Section 604 5 of 5 Corporate Drive Reconstruction Portsmouth, NH

placement of new assemblies, and placement and compaction of suitable backfill (gravels if within the roadway cross section).

5.7 Accepted quantities of field cores of existing structures will be paid at the contract unit price per each field core complete and in place including Kor-N-Seal boot and/or brick masonry to seal annular space around the pipe.

5.7.1 Any common structure excavation, rock structure excavation, and backfill (even if core is completed at a different time than pipe installation, will be subsidiary to respective pipe item for which the field core is intended.

Add the following pay items and units

604.0008	Catch basin hoods (12" to 18" diameter outlet pipe)	EA
604.811	Field core existing structure (6" to 18" diameter pipe)	EA

Section 605 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 605 - Underdrains

Materials

Delete 605.2.5.1 in entirety

Amend Section 605.2.6 to read as follows:

2.6 Underdrain pipe type and associated materials shall be as specified on the Design Drawings.

Amend Section 605.2.10 to read as follows:

2.10 Support membrane shall be mircoweave monofilament geotextile and conform to Item 593.132 – Geotextile, Subsurface Drainage, Class 3, Woven, Monofilament.

Section 618 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 618 - Uniformed Officers and Flaggers

Delete Section 3.1 in entirety and **Replace** with the following:

3.1 Uniformed Officers and Police Details are subject to the Owner's approval. Contact the local Police department 48 hours in advance for Police Details at approved locations.

Delete Section 4.1.3 in entirety.

Basis of Payment

Replace Section 5.1 through 5.2 with the following:

5.1 Payment for police details shall be made for expenses billed to the Contractor by the Police Department in the normal course of providing supervision for traffic control during construction operations.

5.1.1 Police details and police car fees, when required, shall be paid under the allowance stated in the Bid. The allowance stated in the Bid is approximate, and the actual amount to be paid may be more or less but shall match the actual amount paid to the Police Department as authorized.

5.1.2 No mark-up for police details shall be allowed. Only documented police invoice amounts shall be reimbursed to the Contractor. No payment will be allowed for police details ordered but not utilized due to cancellation of work.

5.1.3 Police detail time for corrective work will be the Contractor's responsibility with no additional expense to the Owner.

Section 619 1 of 2 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 619 - Maintenance of Traffic

Delete Sections 1.1 and 1.2 and **Replace** with the following:

- **1.1** This work shall consist of providing and maintaining safe and passable traffic accommodations for public travel; preventing dust nuisance; and furnishing, erecting and maintaining necessary traffic signs, barricades, lights, pavement markings, and other traffic control warning devices required for the safe guidance of traffic through the work zone. The Contractor shall be responsible for this work and shall perform it in accordance with the current MUTCD, Work Zone Traffic Control Standard Plans, the approved Traffic Control Plan (TCP) and these specifications.
- **1.2** The Contractor shall provide all permanent and operations construction signs and warning devices based on the needs of the Contractor's operations in accordance with the approved Traffic Control Plan (TCP).

Add the following Sections 1.3:

1.3 The work will also include erosion control in urban areas, including maintenance of roadway, sidewalks, and adjoining properties in a manner to prevent silt transport to downstream waterways and properties public or private.

Construction Requirements

Add the following Sections:

3.1.13 Erosion Control of roadway, sidewalks and adjoining areas shall be maintained in a manner which will prevent silt transport to downstream waterways and properties public or private.

Method of Measurement

Add the following Sections:

- **4.4** Erosion Control for roadways, sidewalks and adjoining properties is subsidiary to Maintenance of Traffic and will not be measured for payment.
- **4.5** Temporary pavement markings are subsidiary to maintenance of traffic and will not be measured for payment.

Section 619 2 of 2 Corporate Drive Reconstruction Portsmouth, NH

Delete and **Replace** Section 5.1.4 with the following:

5.1.4 All costs associated with permanent or temporary construction signs shall be included in the Maintenance of Traffic lump sum price.

Add the following Sections:

5.1.10 Payment for Maintenance of traffic shall constitute full compensation for furnishing all labor, equipment, and materials necessary to maintain safe and passable traffic conditions for pedestrians and vehicles (day and night). Payment shall include, but not be limited to: erosion control, dust control (all methods), protection and maintenance of excavated, backfilled and graded areas; traffic signs, barricades, lights, signals, delineators, pavement markings, concrete barriers and other traffic control warning devices; and all work incidental to guiding vehicular and pedestrian traffic through the work zone in a safe and convenient manner. MUTCD standards must be followed.

5.1.11 Days where erosion control measures are not maintained in a satisfactory manner, or where SWPPP monitoring reports are not provided, payment (an amount equal to payment for Item 619.1 on that day) will be deducted from the Contractors payment.

Delete Section 5.2 and 5.2.1 and **Replace** Section 5.2 with the following:

5.2 Temporary retroreflective paint pavement markings shall be provided where pavement markings are obliterated from trench excavation, subsidiary to Item 619.1.

Delete Paragraph 5.3

Delete Paragraph 5.4

Section 645 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 645 – Erosion Control

Add the following paragraphs:

1.2.4 Contractor shall provide copies of Storm Water Pollution Prevention Plan (SWPPP) to Engineer and Owner and submit Notice of Intent (NOI) to the EPA, with copies to Engineer and Owner, at least seven (7) days prior to the start of construction.

Amend 3.1.1:

Delete "in accordance with 105.02" from the first sentence.

Amend 3.2.4:

Delete "in accordance with 105.02" from the first sentence.

Amend 3.9.1 by adding the following after the first sentence:

"Maintenance of erosion control measures shall be conducted at no additional cost to the Owner."

Delete 4.3 and **replace** with the following:

4.3 Grass seed is subsidiary and will not be measured for payment.

Amend 4.5 by adding the following after the last sentence:

"Regular silt fence maintenance for damaged or dilapidated sections shall not be measured for payment but be part of the unit item cost."

Delete 5.2 and **replace** with the following:

5.2 Slope seed for permanent erosion control is included in Section 646 and will not be paid for under Section 645. Rye grass ordered for temporary erosion control will be subsidiary to the work and not paid for separately.

Amend 5.5 by adding the following to the end of the sentence:

"and removed upon completion of work and establishment of vegetation."

Section 646 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

<u>Section 646 – Turf Establishment</u>

Add Section 646.2.3.1:

- **2.3.1** The type of seed ordered shall consist of high-test cultivars identified by National Turf Grass Cultivation. Provide one of the following seed mixes:
 - a. Northern Sport Mixture 50/50
 - b. Northeast Nursery Andover CC 50/50 Mix
 - c. John Deere 50/50 Blue Rye Select
 - d. Or submit an alternate similar mix for Owner approval.

Add Section 646.3.4:

3.4 In addition to liability requirements stated in 644.3.7. Protection from erosion shall be included in the unit item without further compensation. Erosion of loamed areas shall be repaired by the Contractor throughout the duration of the project and warranty period.

Add Section 646.4.3

4.3 All necessary material referenced in sections of Part 2, Materials, are subsidiary to Turf Establishment and will not be measured for payment.

Add Section 646.5.4

5.4 All necessary material referenced in sections of Part 2, Materials, are subsidiary to Turf Establishment.

Section 692 1 of 1 Corporate Drive Reconstruction Portsmouth, NH

AMENDMENT TO NHDOT SPECIFICATIONS

Section 692 – Mobilization

Basis of Payment

Add section 1.2:

1.2. This item shall also consist of development of a preconstruction video. Two (2) copies of the video, on a flash drive, which can be clearly viewed on a computer, must be submitted to the Owner prior to the start of construction. The video shall include roadways and adjoining properties, driveways, fences, landscaping, etc.' that may be impacted by construction in this contract. The intent of this video is to document the condition of the roadway and abutting properties prior to construction.

Delete and **Replace** Paragraph 5.1 with the following:

- **5.1** Partial payments for this item will be made as follows:
- (a) When 5% of the original contract is earned, the accumulated total to be paid will be 25% of the amount bid, or 1-1/4% of the original Contract amount, whichever is lesser.
- (b) When 10% of the original contract amount is earned, the accumulated total to be paid will be 50% of the amount bid, or 2-1/2% of the original Contract amount, whichever is the lesser.
- (c) When 25% of the original contract amount is earned, the accumulated total to be paid will be 70% of the amount bid, or 3-1/2% of the original Contract amount, whichever is the lesser.
- (d) When 50% of the original contract amount is earned, the accumulated total to be paid will be 100% of the amount bid, or 5% of the original Contract amount, whichever is the lesser.
- (e) When work is considered substantially complete, the accumulated total to be paid will be 100% of the amount bid, or 5 percent of the original Contract amount, whichever is the lesser.

Delete and **Replace** Paragraph 5.2 with the following:

5.2 Upon completion of all work, payment of any amount bid for this item more than **5** percent of the original Contract amount will be paid.

SPECIAL PROVISIONS

PROSECUTION OF WORK

The Prosecution of Work is intended to provide the Contractor a summary of project requirements for general reference. It is not intended to provide all requirements. Refer to Technical Specifications and Drawings for details.

1. DESCRIPTION OF WORK

The project consists of the following work:

- Base Bid: Road Reconstruction and Drainage Improvements
- Add Alt. #1: Sidewalk Extension (STA 70+00 to STA 72+50)
- Add Alt. #2: Sleeves for Non-Potable Water Pipe (2)

Work to be completed for this project includes the following:

• Drainage Improvements

- Installation of new 12" and 15" CPE drainage (2,400 LF)
- Installation of new 18" PVC drainage (1,700 LF)
- Installation of drain manholes and catch basins.
- Installation of 6" perf PE underdrain (3,300 LF)
- Replace existing catch basin frame and grate assemblies so all "Type B" grates are present in the project limits (pavement areas). Some cone sections and/or slab tops will be replaced.
- Install CB hoods catch basins with only one outlet pipe.

Roadway Reconstruction

- Full depth box out reconstruction (6,500 LF)
 - 15" Crushed stone (fine) subbase
 - 3.5" Binder course pavement
 - 1.5" Wearing course pavement
- Vertical granite curb (re-set) (12,300 LF)
- Side street and drive apron tie-ins

• Sidewalk

- Concrete sidewalk ramps at cross walk locations
- Concrete sidewalk repairs (select locations)
- Grading between the curb and edge of sidewalk

• Stormwater Treatment

- High rate biofiltration (5 units)
- Flow through manhole filter (1 unit)
- Pre-treatment chamber curb inlets (12 units)
- Vegetated pretreatment swales (1,900 LF)

• Property Restoration

- Restoration of construction impacts as work progresses.
- Trench pavement repairs as work progresses
- Landscaping
- Restoration will be paid where unit items are provided. If no item is provided, work is considered subsidiary

2. SCHEDULING AND SEQUENCING OF WORK

Prior to the start of any work, the Contractor shall submit for approval a proposed work schedule. Schedule updates or alterations should be presented at regular progress meetings. The Contractor will need to consider the following items pertaining to general sequencing of the work:

- Erosion Control and Dewatering
- Drainage System
- Pavement Repairs
- Road Reconstruction
- Curbs and Sidewalks
- Stormwater Treatment

Work sequences above will be coordinated with traffic work zone requirements in the following section.

3. MAINTENANCE OF TRAFFIC

A Traffic Control Plan (TCP) shall be submitted to the Engineer for review and will require the approval by the City of Portsmouth and Pease Development Authority. Trenches will be backfilled and roads shall be re-opened to provide safe two-way vehicular and pedestrian traffic at the end of each working day (plates may be used only with prior approval from the Owner).

The TCP shall also include the anticipated number of flaggers to be used for a given work area. The Engineer reserves the right to request more or fewer flaggers as work progresses and conditions change. Although police are not required by the City, an allowance for police details is provided. The intent is to provide a police detail for unique or significant changes in daily traffic patterns. In most cases, flaggers will be appropriate. Variations to the TCP will be dependent on the Contractor's schedule and operations.

Work Zones

Three discrete work zones are identified to facilitate work sequences that maintain reasonable traffic flow and minimize impacts to the traveling public.

- Work Zone 1 Goosebay Drive to Rye Street
- Work Zone 2 Rye Street to Oak Avenue
- Work Zone 3 Oak Avenue to Grafton Road

Work zone limits are shown on Drawing G3. Proposed work sequences and detours should be properly referenced to each respective work zone.

Traffic Flow and Detours

The Contractor shall maintain access to properties and driveways throughout construction, to the greatest extent that is possible. Short duration road closures to through traffic and detours (excepting local traffic) may be approved to facilitate completion of the work.

- Any detours shall only be during working hours and normal traffic shall be restored at the end of each day.
- All temporary detours require approval as part of the Traffic Control Plan submittal.
- The Contractor will not be permitted to use private properties and parking lots as detour routes.
- Any proposed detours and daily operations must facilitate access for local traffic including septage trucks hauling to the Pease WWTF (Work Zone 1 & 2)
- Portable changeable message boards will be used to alert the public to planned detours and changes in traffic patterns

<u>Equipment</u> - Provide necessary barricades, signs and traffic control devices in accordance with approved TCP and NHDOT section 619. Construction warning signs must conform to MUTCD standards, as applicable. Contractor shall provide all portable message signs required for traffic control.

Temporary Pavement

Pavement removal at pipe trench limits shall be proceeded by sawcutting (Item 628.3). As pipe work progresses, the trench surface may be maintained as a gravel surface suitable for traffic (free of rutting, mud, holes, irregular conditions) up to a maximum of 400 LF. Temporary trench pavement repairs shall be completed so that no more than 400 LF of gravel trench surface is exposed at any time.

Adjusting Structures to Grade

Unit pay items for catch basins and manholes include adjustment of frame assemblies to binder grade. Any second adjustment for new structures to meet finish grades will be paid separately. Adjustment of existing structures will be paid twice (set to binder grade; set to finish grade). When an existing structure is to receive a new frame assembly and/or top slab, only one adjustment (to finish grade) will be paid.

For existing sewer manholes and/or catch basins to be lowered, the Contractor together with the Engineer will review each manhole for available adjustment (i.e. brick courses present).

This review shall occur in advance of road re-construction work. If necessary, a new cone section or slab top will be ordered.

Dust Control

The work zone is in close proximity to corporate business entities and waterbodies sensitive to sedimentation. The Contractor is required to control dust on a routine basis. Water and/or Calcium Chloride are required on unpaved surfaces to control dust.

4. CONSTRUCTION LAYOUT

The Contractor will be responsible for all construction layouts. Upon request, the Engineer will provide electronic drawing files for use by the Contractor, for reference throughout the project. The Engineer and/or Owner's Representative, together with the Contractor's Superintendent will review utility corridors, giving consideration to dig-safe markings and Contractor's work plan. The Contractor will advise the Engineer, in advance, of potential conflicts concerning execution of his work. It will be the responsibility of the Contractor to protect and maintain TBM's and control points provided by the Engineer. The Engineer will provide an electronic copy of plans and coordinates to the Contractor upon request to facilitate the Contractor's layout, providing the Contractor executes a release concerning the information transmitted.

5. CONFLICTS AND COORDINATION WITH EXISTING UTILTIES

It will be the Contractor's responsibility to coordinate with the utility companies for identification and re-location, if necessary, of any utilities that are interfering or conflicting with the work shown on the drawings. Loss of production or crew downtime relating to utility work by others will not be considered for additional payment.

Buried Utilities and Service Pipes

All service pipes for sewer, water, gas, and any buried electric and communication utilities that may exist may not be shown on the Drawings. At a minimum, one sewer, water, and gas service can be expected for each building unit, where utility mains exist. Where buildings have multiple units, multiple services can be expected. Additional or unknown utility crossings encountered will be measured for payment as described in Item 1008.13. Repairs to unknown, unmarked or mismarked utilities will be measured for payment as described in Item 1008.14. Repairs for damage to utilities either shown on the plans or through markings on the ground will not be measured for payment. Direct conflicts with utilities resulting in the need for relocation of utilities will be measured for payment, using contract unit items, as deemed appropriate by the Engineer. Additional compensation beyond unit items for loss of production, delays or downtime will not be considered.

Dig Safe

The Contractor is expected to coordinate utility markings through Dig Safe, and Portsmouth DPW and Pease Development Authority, amongst others not named, before proceeding with this work. Utility Markings for sewer and water are based on information on file and should be considered approximate.

6. MEETINGS

Project Meetings

It is anticipated that regular scheduled meetings will be held with Owner's Representatives, Contractor, sub-contractors and regulatory agents at least once monthly, unless an increased frequency in meetings is considered necessary by the Contractor, Owner or Engineer.

Coordination Meetings

Informal weekly meetings are anticipated between the Contractor's Superintendent, Owner, and Resident Project Representative to review progress/schedule, sequence and other day to day issues.

7. TEMPORARY EROSION CONTROL

The drainage system in the project limits has multiple outlets to Hodgson Brook and Grafton Ditch which are considered impaired water bodies. The Contractor shall exercise caution to mitigate the intrusion of any spillage, sediment, turbidity, or pollution into the waterways or adjacent properties around the project area. Sediment and erosion controls shall be operational prior to commencing trench de-watering operations.

A Storm Water Pollution Prevention Plan (SWPPP) will be required and must be kept on site at all times. The SWPPP may be amended as necessary (or as requested by the Engineer) to provide continued erosion and sediment control throughout the project. Appropriate measures shall be implemented to prevent sedimentation migration resulting from the Contractor's construction operations.

8. CONSTRUCTION DEWATERING

Trench dewatering is anticipated to complete the pipe work. The Contractor shall comply with the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Dewatering before proceeding with the work.

This NPDES general permit covers construction dewatering discharges defined as pumped or drained discharges of groundwater and/or storm water from excavations or other points of accumulation associated with a construction activity. Qualified dischargers must submit a Construction Dewatering NOI to EPA-NE to be covered and will receive a written notification from EPA-NE of permit coverage. The EPA-NE contact for NOI forms is Shelley Puleo at (617) 918-1545. The DES contact for this permit is Hayley Franz at (603) 271-0671.

Appropriate sediment and erosion controls shall be operational prior to commencing trench dewatering operations. Construction dewatering is incidental.

9. SIDEWALKS

The project includes the construction of new sidewalks at certain locations. However, not all sidewalks will be replaced. The Contractor shall protect sidewalks designated to remain. Sidewalks specified to remain that are damaged as a result of the Contractor's operation or equipment, will be repaired at the Contractor's own cost. Sidewalk grading shall be in

accordance with ADA requirements. Contractor shall review sidewalk grading with the Resident Project Representative before concrete is placed.

<u>10.</u> GRANITE CURBING

The existing granite curbing shall be reincorporated into the project to the maximum extent possible. Any existing curbing removed and not re-set shall remain property of the Owner and shall be delivered to a stockpile location as directed by the Owner, unless Owner declines the curbing, in which case the curbing will become the property of the Contractor and shall be removed. The bid schedule includes items for re-set and new granite curb. The intent is to provide for additional curb that may be needed if existing re-set curb quantities are insufficient. Limits of new vs. re-set curb shall be reviewed with the Owner prior to the work.

11. GEOTECHNICAL INFORMATION

To assist the Contractor in preparing a bid, boring logs and a geotechnical report are included in Appendix A of the Project Manual. Note that there may be seasonal fluctuations in groundwater elevation and/or changes influenced by other factors including weather.

12. QUALITY ASSURANCE AND MATERIALS TESTING PROGRAM

The Engineer and/or Owner may request tests/samples based on conditions observed in the field. Geotechnical testing may include the following:

- Compaction
 - o Backfill materials
 - o Road subbase
 - o Pavement
- Aggregate gradation and sieve analysis
- Pavement mix properties
- Concrete mix properties
- Other/additional testing requested by the Owner or directed by the Engineer

In the event that material testing results reveal non-conforming material has been installed, the Contractor will be required to submit a plan outlining the approach to correcting the non-conforming work. After corrective actions are completed, the material will be retested for acceptance. The Contractor shall bear the cost of any subsequent sampling, testing and evaluation necessary to demonstrate conformance with the Project Specifications. Such costs may be deducted from payment owed to the Contractor under the respective Contract Unit Item for the work being installed.

13. WORK HOURS

It is anticipated that the Work will be completed Monday through Friday during daylight hours (7 AM to 5 PM) unless specifically noted otherwise. Requests to perform nighttime or weekend operations must be approved by the City at least 2 weeks prior to the anticipated construction operations. Additional costs associated with nighttime or weekend operations will be at the Contractor's expense, unless deemed necessary for consideration of abutters or changes in project sequencing requested by the City.

14. EASEMENTS AND PRIVATE PROPERTY

The Contractor shall not enter upon nor occupy with men, equipment or materials any property outside of the public ROW, unless written consent of the owner is obtained prior to entry. At the completion of work, the property shall be restored to pre-existing condition or otherwise improved as shown on the drawings.

15. STAGING AREA

The Contractor is required to locate and secure all staging and material storage areas. All staging areas to be secured by the Contractor must be approved in advance by the City and PDA. Contractor shall provide a Hold Harmless Release to the City prior to start of use of the staging area. At the completion of work, the Contractor shall receive a release from the property owner's of the staging area(s) and a copy of each release shall be provided to the City prior to final acceptance of the project.

With advance approval from the City and PDA, the Contractor may use the side of the roadway for staging of pipe and structures (CB's and manholes) providing the following conditions are met:

- A. That structures are placed no sooner than one (1) week preceding installation.
- B. Sidewalks and driveways are unimpeded and a minimum of 20 feet of roadway is maintained as a smooth traveling surface for vehicular traffic.
- C. That the Contractor will relocate structures upon notification by the City, if deemed necessary to maintain public relations and/or public safety

The Contractor may use the area known as "Jones School" for staging. Soil stockpiles previously treated for invasive species (now in-active) are present from previous work. After completion of Corporate Drive Reconstruction work the Contractor shall spread the soil and establish turf as part of restoration and project close out (subsidiary to Item 692 Mobilization). Pease Development Authority will require a simple right of entry form to be executed by the Contractor for use of the site.

16. PAVEMENT MARKINGS AND TRAFFIC SIGNS

Temporary pavement markings, to match the existing pavement markings, are subsidiary. Permanent pavement markings are to be reviewed with the Owner's Representative prior to placement. Markings not approved shall be removed at the Contractor's own expense, if requested by the Owner.

Street signs removed or impacted during construction shall be re-set by the Contractor (incidental).

17. ABANDONMENT OF EXISTING PIPE

All pipes to be abandoned (water, sewer, drain, etc. 12-inch diameter or smaller) shall be cut, capped, and abandoned in place, unless shown otherwise on the Drawings. Existing pipe 12-inches or larger and structures located outside normal excavation limits, to be abandoned, shall be filled with flowable fill or removed. All pipes and structures within the excavation limits shall be removed and disposed of by the Contractor at his own cost and will not be measured for additional payment.

18. PROTECTION OF WORKERS AND SITE SAFETY

The Contractor is responsible for completing the project under safe work conditions consistent with OSHA requirements. Underwood may discuss any concerns regarding the Contractor's work with the Contractor's safety coordinator. Excavations adjacent to the traveled way or shoulders shall be backfilled during non-work hours.

19. SAMPLE DOCUMENTS

The following sample documents are attached:

- Field Report The RPR will prepare a field report for each day's work activities when on site including measurement of quantities for payment. Summary of daily field reports quantities will be reviewed with the Contractor daily (or weekly) and will be the basis of monthly pay applications.
- Complaint Forms When property owner complaints arise the Contractor is expected to work with the property owner to resolve the issue immediately. If the issue cannot be resolved at the time it is raised, the attached form will be used to document the complaint and track it until satisfactory resolution.
- Submittal Certification This form is to be used by the Contractor on all shop drawing submittals.

END OF SECTION



DATE JOB NO. PROJECT LOCATION PRESENT AT SITE

UNDERWOOD ENGINEERS, INC.

25 Vaughan Mall

Portsmouth, NH 03801-4012

Weather (Time) Other

NOTES: _

__ of _____

COMPLAINT FORM

Name	Date:
Address:	
	Tel:
Location of Problem:	
Nature of Complaint:	

(Signature)

Attach additional pages if required. Attach <u>copies</u> of receipts or estimates if applicable. Retain copies of all correspondence.

Remit	form	to	Carbon Copy Engineer:
Contra	ctor:		
(Insert Co	ontractor's N	lame	Underwood Engineers, Inc.
Address,	Telephone	& Fax	25 Vaughan Mall
Number)	-		Portsmouth, New Hampshire 03801

SUBMITTAL CERTIFICATION FORM

PROJECT:	CONTRACTOR'S PROJ. NO:
CONTRACTOR:	ENGINEER'S PROJ. NO:
ENGINEER:	
TRANSMITTAL NUMBER:	SHOP DRAWING NUMBER:
SPECIFICATION SECTION OR DRAWI	NG NO:
DESCRIPTION:	
MANUFACTURER:	
The above referenced submittal has bee material and/or equipment meets or exc	on reviewed by the undersigned and I/we certify that the ceeds the project specification requirements with
NO DEVIATIONS	
or	
A COMPLETE LIST OF DE	VIATIONS AS FOLLOWS ^a :
By:	_By: Manufacturer ^C
Date:	Date:

^a Any deviations not brought to the attention of the Engineer for review and concurrence shall be the responsibility of the Contractor to correct, if so directed.

^b Required on all submittals

^c When required by specifications

SPECIAL PROVISION

SECTION 611.41420 – CASING PIPE FOR NON-POTABLE WATER SYSTEM

Description

1.1 General Description of Work. Work under this Section includes construction of casing pipe (sleeve) at roadway crossings to facilitate future non-potable water system construction (carrier pipe).

Materials

2.1 The CONTRACTOR shall provide the following material for the installation of the casing pipe:

2.1.1 Common Backfill. Common backfill shall be granular material, consisting of hard sand and gravel so graded that, of the material passing the No. 4 (4.75 mm) sieve, not more than 35 percent shall pass the No. 200 (0.075 mm) sieve. Common backfill shall be free of organic matter, trash, roots or other deleterious material and shall contain no stone measuring greater in any dimension than two-thirds of the loose lift thickness or 8 inches (200 mm), whichever is smaller. Common backfill shall be capable of forming a firm, stable base when spread and compacted in accordance with this specification. In addition, common backfill shall be non-plastic (plasticity index zero, defined as liquid limit minus plastic limit). Common backfill may be obtained from either on-site excavations or off-site sources. Any materials excavated from the trench not conforming to this specification shall be properly disposed of by the CONTRACTOR and replaced with approved material at no additional cost to the OWNER.

2.1.2 Sand Bedding and Blanket. Sand bedding and blanket material required for installation of the water mains, services, and appurtenances shall meet the following gradation requirements: 100% passing the ½-inch (12.5 mm) sieve and, of the material passing the No. 4 (4.75 mm) sieve, no more than 12% shall pass the No. 200 (0.075 mm) sieve.

2.1.3 Gravel Fill. Gravel fill shall consist of hard, durable gravel free from trash, organic matter, clay, surface coatings, and other deleterious materials. Gravel fill shall have a maximum stone size of two-thirds of the loose life thickness, or 6 inches, whichever is smaller. That portion passing the 4-inch (100 mm) sieve shall meet the following gradation requirements, as determined by ASTM C 136 and ASTM C 117:

<u>Sieve Size</u>	Percent Passing
6 inch (150 mm)	100
No. 4 (4.75 mm)	25-70
No. 200 (0.075 mm) *	0-12

* Based on fraction passing the No. 4 (4.75 mm) sieve.
2.1.3.1 When approved by the OWNER, gravel fill used for pipe bedding shall have a maximum stone size of 1-1/2 inches (37.5 mm).

2.1.4 Crushed Gravel. Crushed gravel shall consist of hard durable sand and gravel, free from trash, organic matter, clay, surface coatings, and other deleterious materials. Crushed gravel material shall meet the following gradation requirements, as determined by ASTM C 136 and ASTM C 117:

<u>Sieve Size</u>	Percent Passing
3 inch (75 mm)	100
2 inch (50 mm)	95-100
1 inch (25 mm)	55-85
No. 4 (4.75 mm)	27-52
No. 200 (0.075 mm)*	0-12

* Based on fraction passing the No. 4 (4.75 mm) sieve.

2.2. HDPE Pipe and Fittings

2.2.1 Pipe shall be fabricated from polyethylene resin compound of the types qualified as PE 4710 by the Plastic Pipe Research Institute method for the determination of Hydrostatic Stress.

2.2.2 Pipe dimension ratio shall be DR 11.

2.2.3 Pipe shall be homogenous throughout and free of visible cracks, holes, foreign materials, blisters, or other deleterious faults.

2.3 HDPE Joining System

2.3.1 Thermal Butt Fusion

2.3.1.1 The pipe shall be joined by means of thermal butt-fusion, whereby the two pipes or fittings to be joined are held in a machine, their ends are softened by means of heat and then pressed together under controlled pressure, resulting in their joining.

2.3.1.2 The butt fusion procedures used shall be procedures that are recommended by the pipe and fitting manufacturer. The CONTRACTOR shall ensure that persons making heat fusion joints have received training in the manufacturer's recommended procedure.

2.3.1.3 The polyethylene pipe lengths to be joined by thermal butt fusion shall be from the same type grade and class of polyethylene compound and supplied from the same raw material supplier.

2.3.1.4 Butt fusion shall be performed between pipe ends, or pipe ends and fitting outlets that have the same outside diameter and wall thickness.

2.3.1.5 Joint strength must be equivalent to or greater than that of the adjacent pipe.

2.2.1.6 Each length of pipe shall be cleaned before joining.

2.2.1.7 De-bead all interior joints. External beads shall not be removed.

2.4 Trench Insulation shall be rigid extruded polystyrene 8 feet long, 2 inches wide and 2 inches thick (2.45 m long, 0.6 m wide, 50 mm thick) having an R value of 10 and conforming to ASTM C 578, TypeVII, and shall be STYROFOAM HI-60 as manufactured by Dow Corning Chemical Co., or approved equal.

2.5 Casing Pipe. Casing pipe shall be DR 11 HDPE ductile iron pipe size pressure pipe as follows:

<u>Description</u>	
Nominal Casing Size	16"
Inside Diameter	14.046"
Outside Diameter	21.6"
Wall Thickness (min)	1.582"
Weight per Foot (min)	34.44#/ft
Tensile Strength (min)	3,600 psi
Type of Joint	Butt Welded
Type of Coating	None

2.5.1 Tolerance. Out-of-round tolerance shall not exceed 0.50 inches (12.5 mm).

2.6 Warning and Tracer Type

2.6.1 Warning and tracer tape shall be at least 6 inches wide and shall be located at a depth as indicated on the drawings.

2.6.2 Tracer tape for non-ferrous pipe or conduit shall be constructed of a metallic core bonded to plastic layers. The metallic tracer tape shall be a minimum 5-mil thick.

2.6.3 Warning tape for ferrous pipe or conduit shall consist of multiple bonded plastic layers. The non-metallic tracer tape shall elongate at least 500% before breaking.

2.6.4 The tape shall bear the wording (or approved equivalent): 'BURIED WATER LINE BELOW', continuously repeated every 30 inches to identify the pipe.

2.6.5 Tape colors shall be purple for reclaimed water pipe as recommended by the American Public Water Association (APWA).

Construction Requirements

3.1 General. The CONTRACTOR shall furnish all pipe, fittings, and related material and appurtenances, labor, tools, and equipment, granular material, and concrete; and perform all operations and incidentals necessary for complete excavation, installation, backfill, flushing, testing and

disinfection as outlined herein and on the plans.

3.1.1 The CONTRACTOR shall be responsible for the layout of the work. The ENGINEER will provide control points.

3.1.2 Consequential damages resulting from the CONTRACTOR not locating the facilities as shown on the plans are the responsibility of the CONTRACTOR.

3.1.3 The CONTRACTOR, at the completion of each part of the work, shall furnish the as-built locations of the water main and appurtenances, with coordinates, elevations and relationship to the Construction Base Line and Benchmarks. The as-built locations shall be to an accuracy of plus or minus 0.10 feet (0.03 m) in plan and elevation.

3.1.4 Any deviations from the locations shown on the plans require the OWNER's and the ENGINEER's approval. Any discrepancies with locations shown on the plans shall be brought to the ENGINEER's attention and subsequently resolved between the OWNER, the ENGINEER and the CONTRACTOR.

3.2 Trench Excavation

3.2.1 General. Excavation, dewatering, sheeting, and bracing shall be carried out in such a manner as to eliminate any possibility of undermining or disturbing the foundations of any existing structure, utilities or any work previously completed under this contract.

3.2.2 On paved surfaces that will not be resurfaced under this contract, the CONTRACTOR shall not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels which are so shaped to allow cutting or damage of such surfaces during excavation or other phases of the work.

3.2.3 All lawns, paved surfaces, roadways, and structures which have been damaged or disturbed by the CONTRACTOR's operations outside of the project work areas shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of operations or as specified on the drawings.

3.2.4 The CONTRACTOR shall provide trench shoring and dewatering, if necessary, to provide a stable and dry trench at all times. The pipe trench must be dewatered to 1 foot 6 inches (0.5 m) below the invert of the new water pipe.

3.2.5 As the excavation approaches pipes, conduits, or other underground structures, digging by conventional trenching machine methods shall be discontinued. Only manual methods of excavating shall be employed around buried utilities.

3.2.6 Not used.

3.2.7 The CONTRACTOR shall maintain utilities, utility services and sewers encountered in the excavation, and repair or replace them to their OWNER's satisfaction and be responsible for consequential damages thereof.

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3.2.8 The CONTRACTOR shall not be compensated for any additional work involved if a utility line, sewer or underground structure that is in the trench line above or below the water main is encountered.

3.2.9 Excavations shall be kept dry until the pipes and appurtenances to be built therein have been completed to such extent that they shall not be damaged.

3.2.9.1 Provide, operate and maintain dewatering system required to lower and control groundwater levels and groundwater hydrostatic pressure during the construction of the Work as required by this Section and the Contract Documents. The CONTRACTOR shall assume full responsibility and expense for the adequacy of the dewatering system.

3.2.9.2 The dewatering system shall be capable of developing an excavated subgrade relieved of any hydrostatic pressure that could cause a decrease in the stability of the excavated subgrade and which shall provide the necessary groundwater control for the proper performance required for completion of the Work.

3.2.9.3 Properly dispose of subsurface water collected in a manner that conforms to all applicable local and state ordinances, statutes and laws.

3.2.9.4 Maintain continual and complete effectiveness of the dewatering system operation to provide a firm, stable, excavated subgrade at all times as required for proper performance of the Work.

3.2.9.5 Provide dewatering necessary to maintain the groundwater table 18 inches (450 mm) below the base of the proposed structure and/or pipe at all times.

3.2.9.6 Erosion Control. Provide adequate protection from erosion from any of the dewatering operations utilized during the course of the construction. Any damage, disruption or interference to newly constructed work or existing properties, buildings, structures, utilities and/or other work resulting directly of indirectly from dewatering operations conducted under this Contract shall be remedied by the CONTRACTOR, at no cost to the OWNER

3.2.9.7 Treatment of Dewatering Operations Discharges. Provide such additional treatment devices as may be required to meet the provisions of the Contract. This may include the construction of sumps and/or settling basins, stone rip-rap, silt fences or other requirements. The treatment devices shall be later removed and/or filled in with acceptable backfill material, and restored to original conditions once that are no longer needed, at no additional cost to the OWNER or NHDOT.

3.2.10 Over-Excavation. If in the opinion of the ENGINEER together with the OWNER, the material at or below the depth of the trench is unsuitable for foundation, it shall be removed to such depths as directed by the OWNER and ENGINEER and shall be replaced with compacted granular backfill (sand) conforming to 209.2.1.1, and placed as provided in 209.3.

3.2.11 If the bottom of the excavation is deeper than the depth shown on the drawings, by error of the CONTRACTOR, the condition shall be corrected by refilling to the proper grade with compacted Granular Backfill (sand) conforming to 209.2.1.1 and placed as provided in 209.3.

3.2.12 Rock and Boulder Excavation. Rock and boulder excavation shall be in accordance with Section 206.

3.2.13 Excess and Unsuitable Excavation. Excess excavation that shall not be used for backfill and unsuitable excavation shall be removed from the site and properly disposed of by the CONTRACTOR in accordance with local, State or Federal regulations.

3.3 Trench Backfill:

3.3.1 General. After the pipe has been placed and has been inspected by the OWNER together with the ENGINEER, backfilling shall be performed without delay.

3.3.2 Bedding. Bedding shall meet the requirements of 2.1.2 and shall extend the full width of the trench from 6 inches (150 mm) below the pipe, to the springline (horizontal centerline) of the pipe. Compact the bedding material to 95% modified proctor (in accordance with ASTM D 157 and ASTM D 2922) prior to the placement of the blanket material.

3.3.3 Blanket. Blanket material shall meet the requirements of 2.1.2 and shall be placed from the springline of the pipe to a minimum of 12 inches (300 mm) above the pipe crown. The trench shall be backfilled by placing and compacting the sand in lifts of 6 inches (150 mm) or less. The blanket shall be carried up evenly on both sides of the pipe, so as not to disturb the pipe. Compact the blanket material to 95% modified proctor (in accordance with ASTM D 157 and ASTM D 2922). Compaction shall be by hand-operated vibratory compactors, or other approved methods.

3.3.4 Backfill. Backfill material from 12 inches (300 mm) above the pipe to the underside of the pavement select material profile, or to the underside of loam and grassed areas, shall be backfilled with common backfill described herein and as approved by the ENGINEER.

3.3.4.1 Backfill shall be placed and compacted in layers of 12 inches (300 mm) or less. Compact the backfill material to 95% modified proctor (in accordance with ASTM D 157 and ASTM D 2922). Compaction shall be by hand-operated vibratory compactors, or other approved methods.

3.3.4.2 Jetting and bucket compaction are not acceptable means of compaction.

3.3.4.3 Trench areas improperly backfilled or having settlement, as determined by the ENGINEER, shall be re-excavated to the grade specified by the ENGINEER, backfilled in 6 inch lifts, and repaved as necessary. The CONTRACTOR shall receive no additional compensation for repair of trench settlement under this Contract.

3.5.12 Buried Pipe Installation Pipe and fittings shall be laid accurately to the line and grades. Care shall be taken to provide a firm bearing for the pipe along its entire length. Pipes shall not be laid in water, nor shall water be allowed to flow through them.

3.5.13 Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, the amount of deflection allowed shall not exceed the manufacturers allowances and shall be subject to the approval of the OWNER and ENGINEER.

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3.5.14 For MJs, the spigot shall be centrally located in the bell, and adequate anchorage shall be provided at abrupt changes in direction and at dead-ends. All surfaces in contact with the rubber gaskets shall be brushed thoroughly with a wire brush immediately prior to assembly. The clean surfaces shall then be brushed with manufacturer's recommended lubricant prior to slipping the gasket over the spigot and into the bell. Lubricant shall also be brushed over the gasket prior to installation for the purpose of removing loose dirt and lubricating the gasket as it is forced into its retaining space. The CONTRACTOR shall use wrenches as recommended by the manufacturer. When tightening bolts, it is essential that the gland be drawn toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket.

3.5.15 For push-on joints, all foreign matter in the gasket seat in the socket shall be removed and the gasket wiped clean and flexed before placing in its seat. A thin film of lubricant shall be applied to the inside surface of the gasket. The plain end of the next pipe, after wiping clean, shall be aligned and carefully entered into the socket until it just makes contact with the gasket. Joint assembly shall be completed by forcing the end of the pipe past the gasket until it makes contact with the bottom of the socket. Final joint assembly of pipe 8 inches (200 mm) and smaller shall be accomplished by pushing against the face of bell of the entering pipe with a crow-bar or other tool. For larger pipe, the assembly shall be made with a jack and suitable slings.

3.5.16 When pipe is cut in the field, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. The cut end shall be tapered back approximately 1/8" (3 mm) at an angle of 30 degrees with the centerline of the pipe with a coarse file or grinder to remove any rough edges which might injure the gasket. DI cement lining shall be undamaged.

3.5.17 The CONTRACTOR shall furnish and install all supports necessary to hold the piping and appurtenances in a firm, substantial manner at the lines and grades indicated on the drawings or as directed by the OWNER and ENGINEER.

3.5.18 Bends, tees, and other fittings in pipe lines buried in the ground shall be backed up with thrust restraint Class A concrete against undisturbed earth (minimum bearing area as shown on the drawings). Concrete for thrust blocks shall not cover joints, bolts or nuts so as to interfere with the subsequent removal of the fitting. If the soil does not provide firm support, then bridle rods, clamps, etc. shall be provided to brace the fittings properly. All accessories shall be seal-coated thoroughly and heavily with an approved material per AWWA C 104 after assembly and shall be subsidiary to the ductile iron fitting unit price.

3.6 Casing Installation:

3.6.1 Casing pipe shall be installed in coordination with the OWNER and NHDOT (on State roadways). Casing shall have water-tight bulkheads or caps at ends of the casing pipe to prevent soil and debris from entering the pipe.

3.7 Final clean-up: on completion of the work, the area shall be cleaned up to the satisfaction of the ENGINEER, including removal of all spoil from the construction, clean-up of materials and temporary construction of structures, repair of pavement and planted areas, or anything else damaged in the construction. Restoration of the area to its original condition, as nearly as possible, shall be accomplished before departure from the site.

UNIT SF

Method of Measurement

4.1 Pipe of the kind, type and size specified will be measured by the linear foot to the nearest 0.1 foot. Measurements will be taken along the centerline of the pipe, end to end.

4.2 Water main insulation will be measured by the square foot to the nearest square foot of area covered. When more than one 2 in layer is specified, each layer will be measured.

Basis of Payment

5.1 The accepted quantity of DR 11 HDPE casing pipe will be paid for at the contract price on a per unit basis for the kind, type, and size specified complete in place as shown on Drawings, with the following stipulations:

5.1.1 Common structure excavation required for the removal of unsuitable material below the typical trench section will be paid for as provided in 206.

5.1.2 All rock structure excavation, any common structure excavation exploratory and any common structure excavation below the depth specified in 206.4.1.1 shall be paid as provided in 206.

5.1.3 Granular backfill (sand), to replace material excavated under 5.1.1 only, will be paid as provided in 209.

5.2 The accepted quantity of water main insulation, including excavation and backfill, will be paid for at the Contract unit price per square foot, complete in place.

Pay items and units (ENGLISH):

611.41416	16" HDPE DR 11 CASING PIPE
611.9512	2"x4" RIGID INSULATION

703.1

1 of 1

SPECIAL PROVISION

SECTION 703.1– Graded Coarse Aggregate #4

Description

- **1.1** The work consists of providing stone fill for the various types at the locations identified in the project drawings.
- **1.2** The applicable sections of the NHDOT standard specifications shall apply to the work including but not limited to Section 105, Section 605, and Section 703.

Materials

2.1 Materials shall conform to the requirements of the NHDOT standard specifications with the additional requirements that gradation for stone size #4 shall be as indicated in the NHDOT Section 703 table.

Construction Requirements

3.1 Construction requirements shall conform to the applicable construction requirements of Sections 703 of the NHDOT Standard Specifications for the type of work required.

Method of Measurement

4.1 Graded Coarse Aggregate #4 under this project shall be measured by the cubic yard of Graded Coarse Aggregate #4 installed.

Basis of Payment

5.1 Payment will be made for Graded Coarse Aggregate #4 provided under this contract on a cubic yard basis and includes all materials and equipment necessary for or incidental to the completion of the work to the satisfaction of the Engineer.

Pay Items and Units

703.1 Graded Coarse Aggregate #4

CY

SPECIAL PROVISION

SECTION 912 – R&R LANDSCAPING

Description

- **1.1** The work consists of removing and resetting existing plantings as indicated in the contract drawings and as directed by the Engineer.
- 1.2 The applicable sections of the NHDOT standard specifications shall apply to the work including but not limited to Section 646 TURF ESTABLISHMENT, Section 650 PLANTING GENERAL, Section 651 EVERGREEN TREES, Section 652 and 653 DECIDUOUS TREES, Section 654 EVERGREEN SHRUBS, Section S655 and 656 DECIDUOUS SHRUBS, Section 657 VINES AND GROUND COVERS and Section 658 TRANSPLANTING PLANT MATERIAL.
- **1.3** All transplanting of existing plants shall be conducted under the direction of an Arborist employed by the Contractor.
- **1.4** The Contractor shall arrange for a site meeting to discuss the work of this Section including the Engineer and representatives from the individual property owners prior to executing the work.

Materials

- **2.1** Materials shall conform to the requirements of the NHDOT standard specifications, Section 650.2, except that plant material shall consist of the existing plants.
- **2.2** Where plant materials are designated to be moved and insufficient root systems or other faults are found in the existing plants, the Engineer may direct that new plants from nursery stock of similar or approved species be substituted.
- **2.3** Bark Mulch areas shall be consistent in material type and color as the existing condition.
- 2.4 Items such as fences, walls and rocks shall consist of existing materials. Supplemental and/or replacement of material damaged as a result of the Contractor's work shall be replaced with materials of comparable type, color and general appearance acceptable to the Owner.

Construction Requirements

3.1 Construction requirements shall conform to the applicable construction requirements of Sections 650 through 657 of the NHDOT Standard Specifications for the type of material being transplanted.

Method of Measurement

- **4.1** No separate measurement will be made for the required individual removal and resetting of landscape items as indicated in the contract drawings. Miscellaneous items such as edging, rocks, statues, brick borders, stone rings, etc where part of the landscape feature shall not be measured for payment and shall be considered part of the landscape reset item.
- **4.2** Work authorized under this section shall be based on the actual invoices submitted for landscaping and restoration as directed.

Basis of Payment

- **5.1** Payment will be made for removal and resetting of landscape items required under this contract including all labor, materials and equipment necessary for or incidental to the completion of the work.
- **5.2** Payment for work authorized under this section will be based on actual invoices with no mark-up. The dollar limit set in the Bid will not limit the Engineer in the value of work performed under this item.
 - **5.2.1** Payment of the amount set in the proposal will not be on a lump sum basis, but only the amount determined for the value of the work ordered will be paid.
- **5.3** The Bidder's attention is called to the dollar amount inserted in the Bid under these items, which dollar amount is the allowance the Owner has set up for R&R Landscaping. This figure must not be altered by the Bidder on the Bid, and must be included to obtain the grand total of the Bid

Pay Items and Units

912.0 R&R Landscaping

Allowance*

*Dollar allowance for Item 912.0 on this project has been set at <u>\$10,000</u>.

SPECIAL PROVISION

SECTION 915 – Dust Control: Calcium Chloride

This section is intended to provide and pay for Calcium Chloride which may be required for Dust Control.

Description

1.1 The Contractor may be required to apply calcium chloride to road surfaces for dust control.

Materials

2.1 Materials shall meet the requirements of AASHTO M144

Construction Requirements

3.1 Apply at a rate sufficient to maintain a damp surface but low enough to assure non-contamination of water courses.

Method of Measurement

4.1 Calcium Chloride under this project shall be measured by the pound of Calcium Chloride, used.

Basis of Payment

5.1 Payment will be made for Calcium Chloride provided under this contract on a per pound basis and includes all materials and equipment necessary for or incidental to the completion of the work to the satisfaction of the Engineer.

Pay Items and Units

915.0 Calcium Chloride for Dust Control

LB

1008.1

1 of 9

SPECIAL PROVISION

SECTION 1008.1 – UTILITY ADJUSTMENTS

Description

1.1 General Description of Work. The purpose of this work is to relocate and/or protect existing utilities found to be in conflict with the proposed drainage improvement as shown on the DRAWINGS, as specified herein and/or as ordered by the ENGINEER.

1.1.1 The City of Portsmouth or its Designated Agent, hereinafter called OWNER, together with the ENGINEER, will inspect, accept and/or reject work related to the utility relocation work herein specified.

1.1.2 The CONTRACTOR shall furnish all materials, labor, tools and equipment, and perform all operations, testing, and incidentals necessary for relocating and protecting existing utilities, as outlined herein and on the DRAWINGS.

1.2 Sequence/Maintenance of Service. The CONTRACTOR is responsible for maintaining continuous water and sewer service to affected customers, except when construction requires an interruption of water service. A service interruption may last no longer than six hours. The CONTRACTOR must obtain written approval from the OWNER prior to interruption of water service to affected water users. The OWNER requires that a written notice be sent to all water customers 48 hours in advance of the scheduled shutdown. The OWNER will provide written notification, but it is the CONTRACTOR's responsibility to establish and address needs, and shall coordinate with the ENGINEER and the OWNER.

1.3 Reference Drawings and Information. Neither the ENGINEER nor the OWNER guarantees the accuracy or completeness of existing conditions shown on the project construction plans.

1.3.1 Sufficient investigations shall be made by the CONTRACTOR so that the CONTRACTOR is knowledgeable about existing conditions prior to tendering a bid.

Materials

2.1 Water Mains and Appurtenances. All products and materials shall conform to the latest appropriate section of American Water Work Association (AWWA) and American National Standards Institute (ANSI) Standards and as otherwise specified hereinafter.

2.1.1 Ductile Iron Water Main Pipe

2.1.1.1 Push-On Type Ductile Iron Water Pipe for temporary and permanent systems shall be ductile iron complying with ANSI A21.51 and AWWA C151, Class 52. Pipe shall be double cement-lined 1/8 inch thick and seal coated inside and out in accordance with ANSI A21.4 and AWWA C104. Joints shall be rubber gasket, push-on type in accordance with ANSI A21.11 and AWWA C111. Use only lubricant that is specified by the pipe manufacturer.

2.1.1.2 Mechanical Joint (MJ) Ductile Iron Pipe for use on bridge crossings shall conform to ANSI A21.51/AWWA C151 Class 52. Mechanical joint fittings shall be ductile iron conforming to ANSI A21.10/AWWA C110. Pipe and fitting joint shall meet ANSI A21.11/AWWA C111 standards and shall include plain rubber gaskets. Pipe and fittings shall be double cement lined and seal coated inside and outside in accordance with ANSI A21.4/AWWA C104. All pipe and fittings shall be furnished with ductile iron retainer glands.

2.1.2 Brass Wedges. Three brass wedges shall be installed in all push-on type joints to provide electrical conductivity between pipe lengths.

2.1.3 Ductile Iron Fittings shall be mechanical joint type with a 350 psi pressure rating in accordance with ANSI A21.10 and AWWA C110. Fittings shall be double cement-lining 1/8 inch thick and seal coated inside and out in accordance with ANSI A21.4 and AWWA C104. Fitting shall be Tyler or approved equal.

2.1.4 Mechanical Joint Restraining Devices shall be used with all mechanical joints. Glands shall be manufactured of ductile iron conforming to ASTM A 536. The ring shall be grade 65-45-12 ductile iron in accordance with ASTM A 536. Mechanical joint restraining devices shall be "Grip-Ring" as manufactured by Romec, "Field Lok" gasket system manufactured by Tyler Union or approved equal.

2.1.5 Couplings shall be mechanical joint ductile iron solid sleeve type meeting the requirements stated above for ductile iron fittings.

2.1.6 Service Pipe for house services and chlorine injection points shall be Type "K" copper tubing conforming to ASTM B 88. The name of trademark of the manufacturer and type shall be stamped at intervals along the pipe.

2.1.7 Service Pipe Couplings shall be made of brass. Both ends of the coupling shall be compression type with a grip joint. Couplings shall be manufactured by Ford, Hayes, Mueller, or approved equal.

2.2 Sanitary Sewer. All products and materials shall conform to the latest ASTM, ANSI or other appropriate standards and as otherwise specified herein.

2.3 Concrete for thrust restraint shall be Class B in accordance with Section 520.

Construction Requirements

3.1 General. The CONTRACTOR shall furnish all pipe, fittings, services and related material and appurtenances, labor, tools and equipment, granular material, and concrete; and

perform all operations and incidentals necessary for complete excavation, installation, backfill, and testing as outlined herein and on the plans; and maintain service at all times.

3.1.1 Consequential damages resulting from the CONTRACTOR not locating the facilities as shown on the Plans are the responsibility of the CONTRACTOR.

3.2 Water Pipe Installation

3.2.1 General.

3.2.1.1 Pipe and fittings shall be handled with care to ensure that the pipe and fittings are in sound, undamaged condition. Particular care shall be taken to prevent damage to pipe coating and lining (if any).

3.2.1.2 The CONTRACTOR shall furnish slings, straps and/or other approved devices to support the pipe when it is lifted. Pipe and fittings shall not be dropped from trucks onto the ground or into the trench. Transporting pipe and fittings from storage areas shall be restricted to operations which shall not cause damage to the pipe or lining (if any).

3.2.1.3 All pipe and fittings shall be examined before laying, and no pipe or fittings shall be installed which are found to be defective. Damaged pipe coatings and/or lining (if any) shall be repaired as approved or directed by the ENGINEER at no additional cost to the OWNER.

3.2.1.4 Any pipe showing a distinct crack with no evidence of incipient fracture beyond the limits of the visible crack, if approved, may have the cracked portion cut off by, and at the expense of, the CONTRACTOR before the pipe is laid so that the pipe used is sound. The cut shall be made in the sound portion of the barrel at least 12 inches from the visible limit of the crack.

3.2.1.5 If any defective pipe is discovered after it has been laid, the CONTRACTOR shall remove the defective pipe and replace it with sound pipe at no additional cost to the OWNER.

3.2.1.6 Pipe and accessories shall be kept in a sound, undamaged condition. They shall, at all times, be handled with care and shall not be dropped, dumped or bumped against any other object. Damaged material shall be replaced at no cost to the OWNER, at any time during the construction that the damage is identified or occurs.

3.2.1.7 Pipe shall be stored off the ground.

3.2.2 Buried Pipe Installation. Installation of all buried piping shall be in accordance with AWWA Standard for installation of ductile iron water mains and their appurtenances, AWWA C600.

3.2.2.1 Pipe and fittings shall be thoroughly cleaned before they are placed. All lumps, blisters, and excess coal tar coating shall be removed from the spigot and from the interior of the bell, and these surfaces shall be wire-brushed, wiped clean and dry, and be free from oil and grease before the pipe is laid.

3.2.2.2 The interior of pipe, fittings and valves shall be kept clean and free of foreign material or soils at all times during storage and installation, or the material will be subject to rejection by the OWNER and ENGINEER.

3.2.2.3 All pipes and appurtenances laid in open trench excavation shall be bedded and uniformly supported over their full-length on bedding of the types specified herein and shown on the drawings. All work shall be performed in a dry trench.

3.2.2.4 Pipe and fittings shall be laid accurately to the line and grades. Care shall be taken to provide a firm bearing for the pipe along its entire length. Pipes shall not be laid in water, nor shall water be allowed to flow through them.

3.2.2.5 At all times when pipe laying is not actually in progress, the open ends of pipe in the trench shall be closed by temporary water-tight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

3.2.2.6 Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, the amount of deflection allowed shall not exceed that required for making a satisfactory joint and shall be subject to the approval of the OWNER and ENGINEER.

3.2.2.7 For mechanical joints, the spigot shall be centrally located in the bell, and adequate anchorage shall be provided at abrupt changes in direction and at dead-ends. All surfaces in contact with the rubber gaskets shall be brushed thoroughly with a wire brush immediately prior to assembly. The clean surfaces shall then be brushed with manufacturer's recommended lubricant prior to slipping the gasket over the spigot and into the bell. Lubricant shall also be brushed over the gasket prior to installation for the purpose of removing loose dirt and lubricating the gasket as it is forced into its retaining space. The CONTRACTOR shall use wrenches as recommended by the manufacturer. When tightening bolts, it is essential that the gland be drawn toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket.

3.2.2.8 For push-on joints, all foreign matter in the gasket seat in the socket shall be removed and the gasket wiped clean and flexed before placing in its seat. A thin film of lubricant shall be applied to the inside surface of the gasket. The plain end of the next pipe, after wiping clean, shall be aligned and carefully entered into the socket until it just makes contact with the gasket. Joint assembly shall be completed by forcing the end of the pipe past the gasket until it makes contact with the bottom of the socket. Final joint assembly of pipe 8 inches and smaller shall be accomplished by pushing against the face of bell of the entering pipe with a crow-bar or other tool. For larger pipe, the assembly shall be made with a jack and suitable slings.

3.2.2.9 When pipe is cut in the field, the cut end shall be tapered back approximately $\frac{1}{8}$ inch at an angle of 30 degrees with the centerline of the pipe with a coarse file or grinder to remove any rough edges which might injure the gasket.

3.2.2.10 The CONTRACTOR shall furnish and install all supports necessary to hold the piping and appurtenances in a firm, substantial manner at the lines and grades indicated on the drawings or as directed by the OWNER and ENGINEER.

3.2.2.11 Bends, tees, and other fittings in pipe lines buried in the ground shall be backed up with thrust restraint Class B concrete, ¹/₂ cubic yard minimum, against undisturbed earth (bearing area as shown on the plans). If the soil does not provide firm support, then bridle rods, clamps, etc. shall be provided to brace the fittings properly. All accessories shall be seal-coated thoroughly and heavily with an approved material per AWWA C104 after assembly and shall be subsidiary to the ductile iron fitting unit price. Thrust blocks are to be poured in place unless otherwise approved by the ENGINEER.

3.3 Sewer Pipe Installation

3.3.1 General

3.3.1.1 Pipe and fittings shall be handled with care to ensure that the pipe and fittings are in sound, undamaged condition. Particular care shall be taken to prevent damage to pipe coating and lining (if any).

3.3.1.2 The CONTRACTOR shall furnish slings, straps and/or other approved devices to support the pipe when it is lifted. Pipe and fittings shall not be dropped from trucks onto the ground or into the trench. Transporting pipe and fittings from storage areas shall be restricted to operations which shall not cause damage to the pipe or lining (if any).

3.3.1.3 All pipe and fittings shall be examined before laying, and no pipe or fittings shall be installed which are found to be defective. Damaged pipe coatings and/or lining (if any) shall be repaired as approved or directed by the ENGINEER at no additional cost to the OWNER.

3.3.1.4 Any pipe showing a distinct crack with no evidence of incipient fracture beyond the limits of the visible crack, if approved, may have the cracked portion cut off by, and at the expense of, the CONTRACTOR before the pipe is laid so that the pipe used is sound. The cut shall be made in the sound portion of the barrel at least 12 inches (300 mm) from the visible limit of the crack.

3.3.1.5 If any defective pipe is discovered after it has been laid, the CONTRACTOR shall remove the defective pipe and replace it with sound pipe at no additional cost to the.

3.3.1.6 In general, gravity pipe laying shall proceed upgrade with spigot ends pointing in the direction of the flow.

3.3.1.7 Flow from existing service connections and main lines shall be maintained at all times by pumping, holding tanks or other methods approved by the ENGINEER. Under no circumstances will the dumping of raw sewage on private property, in municipal streets or into waterways, be allowed.

3.3.2 Installing Sewer Pipe and Fittings

3.3.2.1 The CONTRACTOR shall have on the job site with each pipe laying crew, all the proper tools to handle and cut the pipe.

3.3.2.2 All pipe and fittings shall be thoroughly cleaned before laying, and shall be kept clean until installed.

3.3.2.3 Pipe shall be laid in the dry trench conditions. At no time shall water in the trench be permitted to flow into the pipe. At any time that work is not in progress, or the trench is unattended, the end of the pipe in the trench shall be suitably closed to prevent the entry of animals, earth, water, etc. using watertight expandable plugs.

3.3.2.4 Lay PVC pipe and fittings in accordance with the requirements of AWWA C900, except as provided herein. PVC pipe shall not be installed when temperatures are below 32 ° F (0 ° C) unless approved by the ENGINEER.

3.3.2.5 Lay ductile iron pipe and fittings in accordance with the requirements of AWWA C600, except as provided herein.

3.3.2.6 Excavation shall conform to the Trenching Section shown on the plans.

3.3.2.7 As soon as excavation has been completed to the proper depth place and compact bedding materials, as specified in the Trenching Section, to the elevation necessary to bring the pipe to grade. The compacted material shall be shaped so that the bottom quadrant of the pipe rests firmly on the bedding for the entire length of pipe barrels. Suitable holes shall be dug for bells or couplings to provide ample space for jointing pipe.

3.3.2.8 Each pipe section shall be placed into position on the pipe bed in such a manner and by such means required to avoid injury to all persons, property and pipe involved.

3.3.2.9 Permanent blocking under the pipe is not permitted, except where a concrete cradle is required, in which case precast concrete blocks shall be used.

3.3.2.10 Jointing shall conform to the manufacturer's instructions and appropriate ASTM Standards.

3.3.2.11 Any debris, tools, etc. shall be removed from the pipe.

3.3.2.12 After placing the pipe on the bedding, the bedding material shall be placed and compacted to the springline of the pipe.

3.3.2.13 Following placement of the bedding material, the blanket material shall be placed and compacted from the springline to 12 inches (300 mm) above the crown of the pipe.

3.3.2.14 After placement of the blanket material the pipe shall be checked for alignment and grade. If the pipe has been properly installed, the CONTRACTOR may refill or backfill the remainder of the trench in conformance with the Trenching Section, and details shown on the plans.

3.3.2.15 At the end of each day's work, or more frequently, the ENGINEER will view the pipe installation with the CONTRACTOR. Unsatisfactory work shall be dug up and reinstalled

to meet the requirements of the Contract Documents with no additional time allowed for completion of the Work and at no additional cost to the OWNER.

3.3.2.16 When cutting of pipe is required, the cutting shall be done by machine (power cutter) without damage to the pipe or cement lining (if any). Cut ends shall be smooth and at right angles to the long axis of the pipe. Pipe ends to be used with a rubber gasket joint shall be beveled and filed or ground smoothly to conform to a manufactured spigot.

3.4 Protection of Water Supplies

3.4.1 There shall be no physical connection between a public or private potable water supply system and a sewer, or sewer appurtenance which would permit the passage of any sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole. Locate the new water main with at least 10 feet (3 m) of horizontal separation distance between it and the existing or proposed sewer main.

3.4.2 A deviation from the separation requirements of 3.10.1 above will be allowed where necessary to avoid conflict with subsurface structures, utility chambers and building foundations, provided that the sewer is constructed as follows:

3.4.2.1 Sewer pipe shall be Class 52 ductile iron.

3.4.2.2 Joints shall be pressure tested with zero leakage at 25 psi for gravity sewers, and at 1-1/2 times working pressure for force mains.

3.4.3 Whenever sewers must cross water mains, the sewer shall be constructed as follows:

3.4.3.1 Vertical separation of the sewer and water main shall be not less than 18 inches.

3.4.3.2 Sewer pipe joints shall be located at least nine feet horizontally from the water main.

3.4.3.3 Sewer pipe joints shall be pressure tested with zero leakage at 25 psi for gravity sewers, and at 1-1/2 working pressure for force mains.

3.5 Disinfection. Before being placed in service, all new and temporary water pipelines shall be chlorinated by the CONTRACTOR in accordance with the requirements of AWWA C651. The procedure shall be discussed with the OWNER and ENGINEER prior to proceeding with the work.

3.5.1 The location of the chlorination and sampling points will be determined by the OWNER and ENGINEER in the field. Taps for chlorination and sampling shall be uncovered and backfilled by the CONTRACTOR, as required. The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines, and then introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for a minimum of 24 hours.

3.5.2 Following the chlorination period, all treated water shall be flushed from the lines at their extremities, and replaced with water from the distribution system. Bacteriological sampling

and analysis of the replacement water shall then be made after the replacement water has occupied the chlorinated pipeline for a minimum of 16 hours. Bacteriological analysis shall be completed by a state-certified laboratory in full accordance with AWWA C651. The CONTRACTOR shall rechlorinate at no cost to the OWNER or DEPARTMENT if the test fails to achieve satisfactory results, as approved by the ENGINEER. The line shall not be placed in service until the requirements of the NHDES, Water Supply Engineering Bureau are met.

3.5.3 Special disinfection procedures, such as soaking or swabbing approved by the ENGINEER, shall be used in connections to existing mains and where the method outlined above is not practical.

3.6 Spare Parts. The CONTRACTOR will be required to have on-site, at all times, the following spare parts:

11 ¼ ° bends2 for each size pipe22 ½ ° bends2 for each size pipe45° bends2 for each size pipeSolid sleeve couplings2 for each size pipeSDR 35 PVC pipe2 lor each size pipeDresser couplings2 for each size pipeRetainer glands2 for each size pipe

Method of Measurement

4.1 Relocation of water pipe to resolve conflicts with proposed drainage work (when directed) will be paid for each water pipe segment relocated in accordance with the drawings.

4.2 Not Used

4.3 Repair of unknown utilities or mismarked utilities will be measured as a single unit for each utility pipe that requires repair, regardless of the size or material of the utility conduit.

4.3.1. To be eligible for measurement under this item, the Contractor shall review the utility discovered with the Owner's Representative to determine that the utility repairs are required.

4.3.2. Repair of utilities that are marked by Dig-Safe or indicated on the drawings will not be measured for payment, unless they are 6-feet beyond the locations indicated as determined and measured by the Engineer.

Basis of Payment

5.1 Water Pipe Relocation, Sewer Pipe Relocation and Repair of unknown utilities or mismarked utilities will be paid for at the contract unit price for each utility relocated and/or repaired.

5.1.1 To be eligible for payment under this item, the Contractor shall review the utility discovered with the Owner's Representative to determine that the utility relocation or repairs are required. Any utility relocated or repaired without approval from the Owner's Representative will not be considered for payment.

5.1.2 Said unit price will be considered full compensation for all materials, equipment and labor, necessary to relocate known utilities or repair unknown or unmarked utilities to original or better condition using similar or compatible materials, as approved by the Engineer or Owner's representatives.

5.1.2.1 Repairs using dissimilar sizes or materials, or utility repairs that are not properly aligned as determined by the Engineer will not be considered for payment.

5.1.2.1 An unknown or mismarked utility will only be considered once for payment

Pay items and units:

1008.12	Waterline Relocation at Drain Crossing	EA
1008.13	Unknown Utility Crossing	EA
1008.14	Repair Unknown or Mismarked Utility	EA

SPECIAL PROVISION

SECTION 1008 -- ALTERATIONS AND ADDITIONS AS NEEDED

ITEM 1008.2 - Alterations and additions as Needed - Soils Testing Allowance

This section is intended to provide and pay for certain soils testing measures which may be required during construction. Engineering judgment indicates that a reasonable estimated dollar allowance is in order in setting up the contract.

Description

1.1 The Contractor may be required to conduct tests for compaction and material gradation to demonstrate the work installed complies with the specifications.

Materials

2.1 Materials required for testing soil properties shall be those accepted by standard industry practices and may include such equipment necessary to perform Standard or Modified Proctor tests, in place density testing, sieve analysis, etc.

Construction Requirements

3.1 Earth materials which have been disturbed and backfilled shall be compacted to a minimum of 95% of the maximum density. The maximum density determination shall be made as specified in AASHTO T 99 (Standard Proctor Test). The in-place density determination shall be made by AASHTO T 191 (Sand-Cone Method), AASHTO T 204 (Drive Cylinder Method) or by AASHTO T 310 (Nuclear Methods). If the required density cannot be achieved with the equipment at hand, the contractor shall obtain whatever equipment is necessary to achieve the specified density. Manipulation of tills, silts, and clays, or any combination thereof, (including aeration where necessary) will be required to produce a stable fill of the required density.

Method of Measurement

4.1 Work authorized under this section shall be based on the actual invoices submitted for soils testing procedures.

Basis of Payment

5.1 Payment for work authorized under this section will be made on a dollar basis for each manhour on-site plus laboratory testing costs and will be based on actual invoices with no mark-up. The dollar limit set in the Bid will not limit the Engineer in the value of work performed under this item.

5.1.1 Payment of the amount set in the proposal will not be on a lump sum basis, but only the amount determined for the value of the work ordered will be paid.

5.2 The Bidder's attention is called to the dollar amount inserted in the Bid under these items, which dollar amount is the allowance the Owner has set up for soils testing procedures. This figure must not be altered by the Bidder on the Bid, and must be included to obtain the grand total of the Bid.

Pay items and units:

1008.2 Soils Testing

Allowance*

*Dollar allowance for Item 1008.2 on this project has been set at \$7,500.00.

S P E C I A L P R O V I S I O N ITEM 1010.11 – HIGH RATE BIOFILTRATION STORMWATER TREATMENT UNITS

Description

- **1.1** This work shall consist of furnishing and installing high rate biofiltration stormwater treatment units as shown on the plans, as described below and as directed.
- **12** A pre-treatment chamber will be installed at the gutter line curb cut to direct stormwater to the treatment units within vegetated swales running parallel to the roadway.

Materials

- 2.1 High Rate Biofiltration: The treatment units will include high rate biofiltration media (100 in/hr or greater), underdrain stone, mulch, underdrain piping, overflow bypass, piping, vault structure, membrane/liner and plants (type and layout to be selected by the Owner). High rate biofiltration units shall be as follows:
 - 2.1.1 "Filterra Bioscape Vault with Internal Bypass Basin" as manufactured by Contech Engineered Solutions LLC, 9025 Centre Pointe Drive, Suite 400, West Chester, OH 45069. (800) 338-1122. Basin Vault dimensions will be as shown on the plans.
 - 2.1.2 "FocalPoint High Performance Modular Biofiltration System" as manufactured by Convergent Water Technologies, Inc., 13100 Wortham Center Dr. Third Floor, Suite 3134, Houston, TX 77065. (800) 711-5428. Dimensions of modular biofiltration system will be as shown on the plans.
- 2.2 Pre-Treatment Chamber shall be "Rain Guardian Bunker Pretreatment Chamber" as manufactured by Anoka Conservation District, 1318 McKay Dr. NE, Suite 300 Ham Lake, MN 55304. (763) 434-2030

Construction Requirements

3.1 High Rate Biofiltration Units Contractor to furnish all labor, materials, equipment, and incidentals necessary to install and/or prepare the site for placement

of the bioretention system, appurtenances, and incidental work in accordance with the manufacturer's instructions and as shown on the drawings and as specified.

- **3.2 Required Plants** The Owner will select plants for each high rate biofiltration unit from the Manufacturer's list or as recommended by a certified nursery or landscape contractor. Plantings shall be:
 - Native plants
 - Plants with shallow fibrous root systems (no plants with tap roots or surface spreading).
 - Woody shrubs or herbaceous plants
 - Salt tolerant plants

Common Name Latin Name Mature Mature **Typical** Sun Size Height Spread Spacing A. **Extra Small Grass/Flowering Plants** New England Aster Aster novae 1-6' 24" o.c. Full to 1-2 gal. (1 gal. min.) angliae partial sun 24" o.c. Switch Grass Panicum Sun 3-6' 1-2 gal. (1 gal. min.) virgatum 24" o.c. St. John's Wort Hypericum Full sun to 3-6' 1-2 gal. (1 gal. min.) densiflorum partial shade **Small Grass/Shrub/Flowering Plant B**. New York Ironweed Vernonia Sun 4-8' 1-7 gal. 36"-42" o.c. noveboracensis Joe Pye Weed Eupatorium 1-7 gal. 36"-42" o.c. Sun 1.5-6' fistulosum Wild Hydrangea (P) Hydrangea Partial shade 3-8' 1-7 gal. 36"-42" o.c. arborescens 3-10' 1-7 gal. 36"-42" o.c. Sweet Azalea (P) Rhododendron Full sun to canescens partial shade Pinxterbloom Azalea Full to 3-10' 1-7 gal. 36"-42" o.c. Rhododendron (P) periclymenoides partial sun Swamp Azalea 36"-42" o.c. Rhododendron Full sun to 6-8' 1-7 gal. viscosum partial shade C. **Medium Shrubs** 48"-54" o.c. Black Chokeberry Aronia Full shade to 3'-6' 4'-6' 1-7 gal. melanocarpa full sun 6'-10' 1-7 gal. 48"-54" o.c. Red Chokeberry Partial shade 4'-6' Aronia arbutifolia to full sun

Selections from the manufacturer's plant list are provided below:

See attached sample planting plans and guide provided by the high rate biofiltration manufacturers.

- **3.2.1 Maintenance and Protection for Planting** Maintenance shall begin immediately after each plant is planted and shall continue through both provisional acceptance and the minimum 90 day maintenance period as specified, herein.
 - **321.1** Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, re-mulching, tightening and repairing of guys, removal of dead material, resetting plants to proper grades or upright position, and maintaining the planting saucers.
 - a Plants shall be inspected for watering needs at least twice each week during the growing season and watered as necessary to promote plant growth and vitality.
 - b. Mulched planting beds and individual plant pits shall be kept free of weeds, and mulch shall be replaced as required to maintain the specified layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the designed layout.
 - c. Plants that die or show obvious decline, or a loss of 5% of healthy growth during the maintenance or guarantee period, shall be removed and replaced at once, unless designated otherwise by the Owner's Representative.
 - d Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by Owner's Representative.
 - **32.12** During the maintenance period, any decline in the condition of plantings shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall engage professional arborists and/or horticulturalists to inspect plant materials and to identify problems and recommend corrective procedures.
- **3.2.2 Certificate of Acceptance and Guarantee for Plants** Following completion of all plant material installation, the Contractor shall request the Owner's Representative in writing for a formal review of the completed planting work. If plant materials and workmanship are acceptable, written notice will be provided by the Owner's Representative to the Contractor stating that the work has received provisional acceptance and that the 90 day maintenance period shall commence.
 - **3.2.2.1.** The 90 day maintenance period shall occur only during the growing season May 1 to October 15.
 - **3.2.2.** If final review of the completed work occurs at the end of the growing season, the ninety day maintenance period shall be suspended temporarily, and shall resume at the beginning of the next growing

season starting as of May 1 of the next year. If the 90 day maintenance period is not complete by October 15, it shall continue into the next growing season resuming again as of May 1.

- **3.2.2.3** Plants that die or show obvious decline or loss of 5% of healthy growth during the maintenance period, shall be removed and replaced at once, unless designated otherwise in writing by the Owner's Representative.
- 3.2.3 After the minimum 90-day maintenance period, the Contractor shall again request the Owner's Representative, in writing, for an onsite review to determine whether the plant material is acceptable. If the plant material and workmanship are acceptable, written notice will be given by the Owner's Representative to the Contractor followed by a Certificate of Acceptance (see attached sample at the end of this section). The 2-year guarantee period begins from the date of the Certificate of Acceptance.
- 3.2.4 If a substantial number of plants are sickly or dead at the time of the onsite review, acceptance will not be granted, and the Contractor's responsibility for maintenance of all plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the project. Replacements shall conform in all respects to the specifications for new plants and shall be planted in the same manner. Replacements shall be maintained by the Contractor for 90 days of growing season after written approval of the replacements by the Owner's Representative.
- 3.2.5 Plants shall be guaranteed for a period of 2 years after the Certificate of Acceptance and shall be alive and in satisfactory growth at the end of the guarantee period. Plants that die, show obvious decline or loss of 5% of healthy growth during the guarantee period, shall be removed and replaced at once, unless designated otherwise by the Owner's Representative.
- 3.2.6 At the end of the 2-year guarantee period, an onsite review shall be made again by the Owner's Representative. Any plant required under this contract that is dead or unsatisfactory shall be removed from the site. Each plant shall show at least 95% percent healthy growth and shall have the natural character of a plant of its species in accordance with the American Nursery and Landscape Association Standards. Dead or unsatisfactory plants shall be replaced during the normal planting season, until the plants live through one year. A final review for acceptance shall be made by the Owner's Representative after the replacements have lived through 1 year.
- 3.2.7 All replacements shall be plants of the same kind and size specified in the PLANT SCHEDULE and all costs shall be borne by the Contractor, except for possible replacements due to vandalism.

3.3 Pre-Treatment Chamber

- **3.3.1** Paved apron at curb cut will be sloped toward the swale at 2% to 3.5% from the edge of the road to the top of the pre-treatment chamber as shown on the Drawings.
- **3.3.2** Where no pre-treatment chamber is specified, extend slope paving from curb cut into centerline of swale to the limits shown on the Drawings or as directed.

Method of Measurement

- **4.1** High rate biofiltration units will be measured per each unit complete in place including vault basins, high rate biofiltration media (100 in/hr or greater), underdrain stone, mulch, underdrain piping, overflow bypass piping, pipe connection from unit to discharge structure (as shown on plans) and plants.
- **4.2** Pre-Treatment chambers will be measured per each complete in place.

Basis of Payment

- **51** The accepted quantity of high rate biofiltration units will be paid at the Contract price per unit complete in place including high rate biofiltration media (100 in/hr or greater), underdrain stone, mulch, underdrain piping, overflow bypass piping and plants.
- **52** The accepted quantity of pre-treatment chambers will be paid at the Contract price per unit. Contractor to furnish all labor, materials, equipment, and incidentals necessary to install and/or prepare the site for placement of the pretreatment chamber, including excavation, backfill, subgrade preparation, crushed stone base, concrete (including forms and finish work), straight and curved vertical granite curb, appurtenances, hardware and incidental work in accordance with the manufacturer's instructions and as shown on the Drawings and as specified.
- 53 Swale construction including bituminous aprons where no pre-treatment chamber is specified will be paid under Items: 203.1 Common Excavation, 203.6 Embankment in place, 403.12 Hot Bit. Pavement – Hand Method, and 645.512 Turf Establishment with mulch, tackifiers, and loam, respectively.
- **54** Payment for high rate biofiltration units shall include all maintenance and protection necessary to guarantee vigorous plant growth (including replacement if necessary) for acceptance following the 2-year plant warranty period.

1010.11

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Pay Item	Description	<u>Units</u>
Item 1010.1101	Pre-Treatment Chamber	Unit
Item 1010.1102	High Rate Biofiltration – Small	Unit
Item 1010.1103	High Rate Biofiltration – Medium	Unit
Item 1010.1104	High Rate Biofiltration – Large	Unit

Filterra® Bioscape Vault Plant Palettes

KEY: (refer to plant lists for species sizing)



* UNPREPARED SITE FEE NOTE: A charge of \$1500.00 will be invoiced for each activation visit requested by customer where Contech determines that the site does not meet the conditions required for Activation AND/OR acceptable plants are not provided by the contractor. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized activations will void the system warranty and waive manufacturer supplied activation and final inspection.

Filterra Activation Package | Page 6



General Information

It's important to understand that the FocalPoint High Performance Modular Biofiltration System (HPMBS) uses a very high flow, coarse sand media with about 10% organic by volume. The media is designed to drain very quickly but through various physical, chemical and biological processes to capture nutrients and other pollutants very efficiently. It is an open system, thus, it receives nutrients and organic material from the contaminated runoff every time it rains.

As a filter it treats a very large impervious surface and is exposed to much more water compared to a typical landscape plant. For example, a typical landscape shrub (on the east coast) would only receive an annual rainfall volume of about 40 inches per square foot or 3.3 ft. of run off per year. A HPMBS treating 1/4 acre of impervious surface would receive over 1,200 inches per square ft. or 100 ft. of runoff per year.

As a result of this unique circumstance, the FocalPoint HPMBS creates a completely different environment when compared with typical growing media or soil, and therefore many common rules and traditional landscape industry concerns about soils and plant productivity are not applicable. Although possibly counter intuitive, the science of high flow rate biofiltration media is well understood. FocalPoint's implementations began in 2009 in Texas, and now reach across the U.S and all are working well with the plants thriving.

General Rules

- 1. Native Plants are best suited as they adjust well to periodic droughts and temperature extremes. Plants should be watered at planting, especially during drought periods. Use USDA Hardiness zones as the first guide for plants. Keep in mind that some perennials (i.e. daylilies, hortas etc. die back in fall and re-emerge in spring. If you want green year round be mindful of the perennials used)
- 2. Root morphology is important. Shallow fibrous root systems are best, generally only grow to depths of 3 ft. Dig planting holes the depth of the root ball and two to three times as wide as the root ball. Wide holes encourage horizontal root growth that plants naturally produce. If roots are circling around the root ball exterior, cut through the roots in a few places and remove the first inch of roots and plant in material around the root ball. Cutting helps prevent circling roots from eventually girdling the trunk. If roots are not circling, the root ball should still be rubbed to loosen roots and promote growth into the media.

Spacing		Shrubs			Clump Grasses	Small Trees	
	Rootball Size	< 1 gallon	5 gallons	15 gallon	Plant clump grass-		
	Spacing On Cen- ter	24 inches	42 inches	60 inches	es 24 inches on center	Plan small trees 12 feet on center	

- 3. Small trees, woody shrubs or herbaceous plants are all suitable for the system. With trees, you must ensure you are not planting too deep. Don't dig holes deeper than root balls. The media should be placed at the root collar. Otherwise the stem will be vulnerable to disease.
- 4. Where water is entering a HPMBS in one location be sure to place erosion control stones to prevent scouring.



SPECIAL PROVISION

ITEM 1010.12 – FLOW THROUGH STORMWATER TREATMENT UNIT

Description

- **1.1** This work shall consist of furnishing and installing Flow Through Stormwater Treatment Unit as shown on the plans, as described below and as directed.
- **1.2** The storm tech unit will include 4-foot precast watertight concrete structure that conforms to ASTM C478, with all internal components included, as approved by the Engineer.
- **1.3** The applicable sections of the NHDOT standard specifications shall apply to the work including but not limited to Section 604.

Materials

- **2.1** Flow Through Stormwater Treatment Unit shall be "JellyFish JF4 Offline Configuration" as manufactured by Contech Engineered Solutions LLC, 9025 Centre Pointe Drive, Suite 400, West Chester, OH 45069. (800) 338-1122.
- **2.2** Submittal documents shall include manufacturer's drawings developed for applications to the specific project conditions shown on the Drawings. The manufacturer's O&M literature shall be included.
- **2.3** Provide one (1) JellyFish cartridge backflush pipe as manufactured by "Imbrium Systems".

Construction Requirements

3.1 The Contractor shall furnish and install the Flow Through Stormwater Treatment Unit, complete in place and operational as shown as specified herein, in accordance with the requirements of the plans and contract documents.

Method of Measurement

4.1 Flow Through Stormwater Treatment Unit will be measured per each unit complete in place including precast concrete watertight manhole with all internal components and piping, cast iron hinged manhole frame and cover assembly, complete and in place.

Basis of Payment

- **5.1** The accepted quantity of flow through stormwater treatment units will be paid at the Contract price per unit including precast concrete watertight manhole with all internal components and piping, cast iron hinged manhole frame and cover assembly, complete and in place as shown on the Drawings.
- **5.2** For every five (5) treatment units, supply one (1) JellyFish cartridge backflush pipe.

Pay Item	Description	<u>Units</u>
Item 1010.12	Flow Through Stormwater Treatment Unit	Unit

SPECIAL ATTENTIONS

SSD: 3/31/14, 7/30/75, 5/9/83, 12/5/84, 2/12/92, 10/19/93, 5/9/94, 1/26/95, 12/30/96, 02/24/97, 12/08/08, 4/15/09, 01/01/12, 04/16/12, 03/24/15, 01/15/16, 02/21/16, 07/28/16, 04/21/17 08/22/17, 12/24/18, 12/23/19, 04/08/20, 12/14/20, 12/28/21, 12/02/22

June 26, 2023

SPECIAL ATTENTION

ASPHALT CEMENT ADJUSTMENT AND ASPHALT CEMENT ADJUSTMENT FOR EMULSION

Bid items involving asphalt concrete mixtures containing asphalt cement may be subject to a price adjustment. Only the asphalt portion of asphalt-rubber cement will be eligible for price adjustment. The adjustment will take effect when the monthly price for asphalt cement as furnished by the Department differs from the base price contained in the proposal. Affected Sections and formulas are detailed below.

The <u>base price</u>* of asphalt cement for this Contract is \$<u>662.50</u> per ton.

The **monthly price*** of asphalt cement used to determine the Asphalt Cement Adjustment will be furnished by the Department and will be posted on the following web site: www.nh.gov/dot/org/projectdevelopment/construction/documents/NHMonthlyFuelAsphaltandSteelPrices.pdf.

***Source**: The monthly price, applicable for the entire month, is developed from information in the *Asphalt Weekly Monitor*, a publication from Poten and Partners, Inc. The monthly price will be the average of the price range for Southern Maine/New Hampshire PG 64-28 asphalt binder, as published in the *Asphalt Weekly Monitor* on the dates shown in the following table. The base price is the latest available monthly price at the time the contract documents are prepared.

2023					
Month	Publication Date	Month	Publication Date	Month	Publication Date
January	December 26, 2022	May	April 24, 2023	September	August 28, 2023
February	January 23, 2023	June	May 22, 2023	October	September 25, 2023
March	February 20, 2023	July	June 26, 2023	November	October 23, 2023
April	March 27, 2023	August	July 24, 2023	December	November 27, 2023

The contract prices of bituminous materials will be paid under the respective items in the contract. The price adjustment, as provided herein, upwards or downwards, will be made concurrently as the work is accomplished as follows:

Item 403.__ - Pavement (except items 403.4, 403.16, & 403.26) and Item 411.__ - Hot Bituminous Concrete Leveling Course and Plant Mix Surface Treatment

The price adjustment will be based on the percent of virgin asphalt cement stated in the Approved Mix Design containing the maximum percentage of reclaimed asphalt pavement. In the event of breakdown or unforeseen circumstances other than weather, an Approved Virgin Mix Design may be used. The price adjustment will then be based on the total percent of virgin asphalt cement in that approved design.

A contract adjustment will be made under **Item 1010.2** based on; [monthly price minus the base price] X [Approved Mix Design percent of virgin asphalt cement] X [tons of pavement used].

SSD: 3/31/14, 7/30/75, 5/9/83, 12/5/84, 2/12/92, 10/19/93, 5/9/94, 1/26/95, 12/30/96, 02/24/97, 12/08/08, 4/15/09, 01/01/12, 04/16/12, 03/24/15, 01/15/16, 02/21/16, 07/28/16, 04/21/17 08/22/17, 12/24/18, 12/23/19, 04/08/20, 12/14/20, 12/28/21, 12/02/22

Item 410.72 - Chip Seal Surface Treatment Rubber Polymerized

A contract adjustment will be made under **Item 1010.2** based on; [monthly price minus the base price] X [asphalt factor] X [tons of AC used] where:

Assumptions:

- Asphalt factor equals 82%
- Tons of AC used equals the total number of gallons sprayed divided by 235

Item 419.1___ - Bonded Wearing Course

A contract adjustment will be made under **Item 1010.2** based on; [monthly price minus the base price] X [Total AC in the BWC process percent] X [tons of BWC paved] where:

Assumptions:

• Total AC in the BWC process equals 5%

Item 419.2 – AR Bonded Wearing Course

A contract adjustment will be made under **Item 1010.2** based on; [monthly price minus the base price] X [Total AC in the AR BWC process percent] X [asphalt factor] X [tons of BWC paved] where:

Assumptions:

- Total AC in the BWC process equals 5%
- Asphalt factor equals 82%

Emulsified Asphalt Cement [For Items 306.33, 405.__, 410.__ (excluding 410.22, 410.72 & 410.75_), 418.11__ , 418.32, and 419.3]

A contract adjustment will be made under **Item 1010.21** based on; [monthly price minus the base price] X [percent of residual asphalt cement] X [Tons of Emulsion used].

Assumptions:

- Quantities are assumed to be measured at 60° F
- Volume reduction between typical delivery temperature $(+/-140^{\circ} \text{ F})$ and 60° F is 2%
- Adjustment payment assumes 62% Residual Asphalt for all grades
- 239 Gallons/Ton is the unit conversion at 60° F

Item 1010.2	Asphalt Cement Adjustment ¹	Dollar
Item 1010.21	Asphalt Cement Adjustment for Emulsion ¹	Dollar

When no item for Asphalt Cement Adjustment and/or Asphalt Cement Adjustment for Emulsion is included in the contract no adjustments will be made.

¹ Not a bid item

SSD: 12/3/79, 4/10/80, 11/19/82, 5/9/83, 12/7/90, 12/20/96, 07/14/04, 09/01/05, 08/06/07, 01/07/09, 04/15/09, 11/30/09, 05/12/10, 02/17/11, 07/16/15, 11/02/15, 12/16/15, 01/20/16, 07/15/16, 08/22/17, 01/23/18, 09/13/18, 02/13/19, 04/24/19, 12/23/19, 04/08/20, 12/14/20, 07/16/21, 12/22/21

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June 27, 2023

SPECIAL ATTENTION

FUEL ADJUSTMENT

- (a) The shortage of all products in relation to the national and worldwide energy situation has made future costs of fuel unpredictable. For this reason, a price adjustment clause is being inserted in this contract to provide for either additional compensation to the Contractor or payment to the State, depending upon an increase or decrease in the price of fuel.
- (b) The fuel usage factors, which will be applied to the several items of the Contract shall be those set forth in Table 1.
- (c) Price adjustment will be based upon the quantity of fuel incorporated in the work as determined by the factors in Table 1.
 - When the monthly sales price determined per paragraph (f) is more than 110% of the fixed base price set forth in paragraph (e), a contract adjustment will be made under Item 1010.15 based on: [monthly sales price less 110% of the fixed base price] multiplied by [item quantity eligible for payment during month] multiplied by [fuel factor].
 - When the monthly sales price determined per paragraph (f) is less than 90% of the fixed base price set forth in paragraph (e), a contract adjustment will be made under Item 1010.15 based on: [monthly sales price less 90% of the fixed base price] multiplied by [item quantity eligible for payment during month] multiplied by [fuel factor].
- (d) The Contractor warrants that its bid prices for this Contract include no allowances for any contingency to cover increased costs for which adjustment is provided herein.
- (e) The fixed base price of fuel will be \$ 2.9725 per gallon.
 - This price is used solely to compute price adjustments. The fuel price will be the lower bulk retail price of **ultra low sulfur diesel fuel** for Boston as published by OPIS (Oil Price Information Service) in the Oil Price Daily, formerly known as the Journal of Commerce, and will include current Federal and State taxes.
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	2023											
Month Publication Date		Month	Publication Date	Month	Publication Date							
January	December 26, 2022	May	April 24, 2023	September	August 28, 2023							
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March	February 20, 2023	July	June 26, 2023	November	October 23, 2023							
April	March 27, 2023	August	July 24, 2023	December	November 27, 2023							

(f) The <u>monthly sales price</u> of fuel will be determined by the Department based on the following schedule:

Monthly sales prices will be set in the same manner as indicated in paragraph (e).

- (g) When an adjustment is called for as provided in paragraph (c), the monthly sales price determined in paragraph (f) will be used for work accomplished in the following month.
- (h) No price adjustment will be allowed beyond the Project completion date unless there is a Department-approved extension of time. Price adjustments <u>will</u> be made on quantities adjusted as a result of the final audit.
- (i) The Department will not be responsible for computing or otherwise indicating price adjustments except to the prime contractor, which must make its own arrangements with its subcontractors.
- (j) When no item for Fuel Adjustment is included in the Contract no adjustments will be made.

Pay item and unit:

1010.15 Fuel Adjustment¹

\$

¹Not a bid item.

Table 1 - FUEL FACTORS Item of Work Item No Item Sector Evel										
Item of Work	Item No.		Units	Fuel						
Excavation:										
Earth	203.14		gal/c.y.	0.26						
	203.50,.5	1								
	203.6 .7									
	206.1									
	207.1									
	504.1									
Rock	203.2		gal/c.y.	0.34						
	206.2									
	207.2									
	504.2_									
Other	203.3		gal/c.y.	0.31						
	206.3_									
	207.3_									
	583									
	585									
	586									
	587									
Bases:										
Unprocessed	209		gal/c.y.	0.46						
	304.1_,.2_									
Processed ⁴	304.3_		gal/c.y.	0.82						
	304.4_,.5_	,.6_								
	508									
Bituminous Concre	te									
Pavement ²	403		gal/ton	1.90						
	411									
All Other Items:			gal/\$1,000 of work	13.0						
Excluded Items: ³				()						
210	510.41_	550.2_	565.7_	<u>692.</u>						
211.	510.61	560	568	693						
306.31_	510.65_	561.	592	69 [°] /						
306.32	521.2_	563.1_	603.0001	698						
306.33_	528	563.2	618	699						
410	544	563.3	619	8						
419.5	548	563.7	624.	10						
510.31_	550.1_	565.2_	645./_							

² Item 403.4, 403.16, & 403.26 shall be calculated using the "All Other Items" category rate.
³ Also excluded are all supplementary agreements, extra work and per specification items.
⁴ Item 304.32 shall be calculated using the "All Other Items" category rate.

E. APPENDIX

APPENDIX A

GEOTECHNICAL REPORT



GEOTECHNICAL INVESTIGATION REPORT

CORPORATE DRIVE RECONSTRUCTION Corporate Drive Portsmouth, New Hampshire

Prepared for:

Underwood Engineers 25 Vaughan Mall, Unit 1 Portsmouth, New Hampshire 03801

Prepared by:

John Turner Consulting, Inc. 19 Dover Street Dover, New Hampshire 03820

JTC Project No. 21-04-095

December 6, 2021

Stephen C. Lanne, PE Vice President of Engineering <u>slanne@consultjtc.com</u> Ph: (413) 222-1675





December 6, 2021

Benjamin Dreyer, PE – Project Manager Underwood Engineers 25 Vaughan Mall, Unit 1 Portsmouth, New Hampshire 03801 Office: (603) 436-6192 Email: <u>bdreyer@underwoodengineers.com</u>

RE: Geotechnical Investigation Report Proposed Corporate Drive Reconstruction Corporate Drive Portsmouth, New Hampshire

Dear Mr. Dreyer:

In accordance with our proposal and your authorization to proceed, John Turner Consulting, Inc. (JTC) has performed a geotechnical investigation for the above-referenced project. Presented herein and attached are the results of the site subsurface investigation, and our recommendations regarding the design and reconstruction of the roadway.

This report completes our scope of services for this project. We appreciate the opportunity to assist you on this project and we look forward to working with you through its completion. Please do not hesitate to contact us if you have any questions or require additional information.

Sincerely, JOHN TURNER CONSULTING, INC.

Stephen C. Lanne, P.E. Vice President of Engineering slanne@consultjtc.com P: (413) 222-1675

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1.0 INTRODUCTION

John Turner Consulting, Inc. (JTC) is pleased to present this Geotechnical Investigation Report for the proposed Corporate reconstruction project in Portsmouth, New Hampshire. JTC conducted geotechnical explorations, laboratory testing, and performed engineering evaluations in general accordance with our proposed scope of services submitted to Underwood Engineers on June 17, 2021.

The purpose of the geotechnical investigation was to obtain information on the subsurface conditions at the site and to provide geotechnical engineering recommendations to support the planning, design, and construction of the proposed roadway improvement and widening. This report summarizes available project information, presents the geotechnical exploration and laboratory testing programs, describes the subsurface conditions encountered, and provides our geotechnical engineering recommendations. The contents of this report are subject to the attached Limitations.

2.0 PROJECT INFORMATION

2.1 Site Description

The current project consists of reconstruction of an approximately 1.9-mile (10,000 feet) long asphalt-concrete paved roadway that begins at International Drive (International Drive/Manchester Square intersection), loops to the east, and ends back at International Drive (International Drive/New Hampshire Avenue/Durham Street intersection) in Portsmouth, New Hampshire. The road provides direct access to numerous businesses, as well as Great Bay Community College, medical facilities, and a wastewater treatment plant. As such, the road is subject to moderate to heavy volume of standard passenger vehicles, moderate truck traffic (including small delivery/box trucks, garbage trucks, etc.), and occasional to periodic tractor-trailer visits.

2.2 Regional Geologic Setting

JTC's review of the "Surficial Geologic Map of the Portsmouth and Kittery Quadrangles, Rockingham County, New Hampshire" (Larson, G.J.; 1992) indicates that the native soils are likely to vary among Glacial and Postglacial Water-Laid Deposits, Marine Offshore Deposits, and Glacial Till. Glacial and Postglacial Water-Laid Deposits include sand, gravel, and silt deposited by meltwater streams discharging into the late glacial sea and/or wave-derived nearshore deposits during marine off lap. Marine Offshore Deposits typically include marine sand, silt, and/or clay associated with the Presumpscot Formation. Glacial Till is generally a heterogeneous mixture of sand, silt, clay, and stones deposited directly by glacial ice. Stratification is rare and it usually overlays bedrock.

2.3 Proposed Development

JTC understands that the proposed Roadway and Drainage Improvements target the full length of Corporate Drive. We understand that the Roadway Improvements will include roadway reconstruction, including a road box section pre-determined by the City of Portsmouth, adding/replacing sidewalks, and adding curbing, crosswalks, ramps, etc. The horizontal alignment and grading of the roadway are expected to remain the same. Drainage improvements will include replacement of selected drainage structures and cross drain pipes, ditch regrading and clean-out, and adding underdrains where groundwater can be anticipated within 2 feet of the pavement grade.

3.0 GEOTECHNICAL EXPLORATIONS

JTC subcontracted Soil Exploration Corporation to advance seventeen (17) geotechnical test borings (designated as B-1 and B-17) via truck mounted drill rig. JTC directed the drilling, testing, and sampling activities and logged the subsurface conditions encountered at each exploration location. Additionally, JTC performed Dynamic Cone Penetrometer (DCP) testing at five (5) boring locations for correlation with California Bearing Ratio (CBR) values.

The exploration locations were selected in relation to the existing site features and proposed development, and under the constraints of drill rig access and utility conflicts. Subsequently, the relative location of the explorations were established via measurements from existing site features and scaling the dimensions onto the provided plan(s). The attached Exploration Location Plan depicts the approximate exploration locations.

Test borings and probes were advanced below the ground surface (bgs) utilizing 4¼-inch insidediameter continuous-flight hollow-stem-augers. At the all boring locations, standard penetration tests (SPTs) were conducted at regular intervals as the borings were advanced and soil samples were obtained via 2-inch outside-diameter split-spoon samplers driven by a 140-pound safety (SAFE-T) hammer. SPTs were performed in general accordance with ASTM D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils. The explorations were backfilled with soil cuttings upon completion of drilling. Soil samples were sealed in moisture-tight containers and returned to JTC's office for further review and classification. Detailed records of the drilling, testing, and sampling performed; and the soil, bedrock, and groundwater conditions observed at the exploration locations are provided on the attached Test Boring Logs.

4.0 GEOTECHNICAL LABORATORY TESTING

JTC selected representative soil samples for geotechnical laboratory testing at our in-house laboratory. The following tests were performed:

- 14 Moisture content determinations
- 19 Particle-size analyses
- 2 Atterberg Limits determination

Geotechnical laboratory testing was performed in general accordance with ASTM procedures.

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Test results are provided on the attached Geotechnical Laboratory Testing Reports and are summarized in the following table:

Location	Sample Source	Depth (ft bgs)	Classification	% Gravel	% Sand	% Fines	% Moisture
CBR-1	Crushed Pavement	0.0	Gravel with Sand (GW)	80.7	18.9	0.4	-
CBR-2	Crushed Pavement	0.0	Gravel with Sand (GW)	80.1	19.4	0.5	-
CBR-3	Crushed Pavement	0.0	Gravel with Sand (GW)	71.9	27.9	0.2	-
CBR-4	Crushed Pavement	0.0	Gravel with Sand (GW)	77.8	21.9	0.3	-
CBR-5	Crushed Pavement	0.0	Gravel with Sand (GW)	80.2	19.6	0.2	-
CBR-1	Base	0.7	Poorly Graded Sand with gravel (SP)	35.4	62.9	1.7	6.4
CBR-2	Base	0.5	Poorly Graded Sand with gravel (SP)	40.8	56.8	2.4	6.2
CBR-3	Base	0.5	Poorly Graded Gravel with sand (GP)	54.8	43.2	2.0	5.1
CBR-4	Base	0.6	Poorly Graded Sand with silt and gravel (SP-SM)	29.1	61.0	9.9	3.9
CBR-5	Base	0.5	Well Graded Sand with silt and gravel (SW-SM)	39.6	57.4	5.7	7.5
B-1	Subgrade	1.0	Silty Sand with gravel (SM)	19.5	60.8	19.7	6.0
CBR-3	Subgrade	1.0	Silty Sand with gravel (SM)	29.0	53.9	17.1	5.7
CBR-4	Subgrade	1.0	Poorly Graded Sand with gravel (SP)	31.7	67.1	1.2	3.9
CBR-2	Subgrade	1.0	Silty Sand with gravel (SM)	37.3	46.4	16.3	5.4
CBR-5	Subgrade	1.0	Poorly Graded Sand with silt and gravel (SP-SM)	25.2	66.7	8.1	6.4
B-4	Fill	5.0	Silty Sand with gravel (SM)	11.9	51.7	36.4	13.1
B-14	Native	7.0	Lean Clay (CL)	0.0	7.8	92.2	27.0
B-12	Native	6.0	Lean Clay (CL)	0.0	3.9	96.1	26.0
B-6	Subgrade	2.0	Silty Sand (SM)	3.4	57.4	39.2	22.3

Summary of Sieve and Moisture Analyses

5.0 SUBSURFACE CONDITIONS

The following subsections describe the site soil, bedrock, and groundwater conditions

encountered, based on results of the geotechnical explorations and laboratory testing. Detailed descriptions of the conditions observed at each test boring are provided on the attached Test Pit Logs.

5.1 General Profile

The primary surface materials and subsurface soil strata are briefly described in the paragraphs below.

5.1.1 Pavement Section

Bituminous concrete pavement was encountered at the surface with thicknesses ranging from approximately 2 to 6 inches at each test boring location. A gravel base layer was encountered underlying the bituminous concrete at all locations ranging in thickness from about 1 to 4 inches. The thicknesses of the bituminous concrete pavement and base layers have been summarized in the table below.

	Bituminous	
Location	Concrete	Base Thickness
LUCATION	Thickness	(inch)
	(inch)	
B-1	3.0	4.0
B-2	3.5	1.0
B-3	4.0	1.0
B-4	4.0	1.0
B-5	6.0	1.0
B-6	4.0	3.0
B-7	4.0	1.0
B-8	2.0	1.0
B-9	2.0	1.0
B-10	5.5	1.0
B-11	6.0	1.0
B-12	6.0	1.0
B-13	2.0	1.0
B-14	3.0	1.0
B-15	4.0	1.0
B-16	4.0	1.0
B-17	4.0	1.0

5.1.2 <u>Fill</u>

Granular soils interpreted to be Fill were encountered below the pavement base in each boring. The soils were generally classified as brown, poorly graded sand with silt and gravel and silty

sand. Traces of Organics were encountered in fill stratum at boring locations B-6 and B-12. This Fill layer was encountered to depths ranging from 2.5 to 7.7 feet below ground surface (bgs). The Fill is considered to be loose to very dense based on a SPT N-Values.

5.1.3 <u>Native Soils</u>

Native granular soils interpreted as Glacial Deposits were encountered beneath the Fill layer in each boring. The Glacial Deposits consisted of dark tan to greyish tan Silty Sand (SM), Lean Clay (CL) with varying quantity of gravel. The Glacial Deposits was considered to be loose to very dense, or medium stiff to very stiff based on SPT N-Values.

5.1.4 <u>Bedrock</u>

Bedrock was not encountered within the test borings and no evidence of shallow bedrock was observed at the site.

5.1.5 <u>Groundwater</u>

No static groundwater was encountered in any of the test explorations at the time of excavation. JTC estimates that this investigation occurred during a period of seasonally low ground water. Site groundwater levels should be expected to fluctuate seasonally and in response to precipitation events, construction activity, site use, and adjacent site use. Water may also become temporarily perched above relatively low permeability soil layers.

5.2 PAVEMENT CONDITION

A pavement condition survey was conducted on November 9 and 10, 2021 by a JTC field engineer. General observations were made regarding pavement drainage and the type and severity of the primary pavement distresses.

Based on our review, the overall pavement condition is considered to be Poor to Fair. The primary distresses observed consisted of longitudinal cracking, block cracking, and alligator cracking. The distresses were observed generally throughout the study area and for the full width of the pavement. Isolated areas of potholes, rutting, and prior patching were also observed.

The roadway is generally slightly lower than the surrounding grade on either side of the road. The road itself is graded higher in the middle than the edges. Overall roadway grading generally appears to provide for positive drainage of stormwater off the roadway and to the edge curbs. Curbs appear generally intact and provide a means to direct stormwater to the catch basins.

6.0 ANALYSIS & RECOMMENDATIONS

Our evaluation of the site was based on our observations of the condition of the pavement, the subsurface conditions encountered at the exploration locations, results of geotechnical

laboratory testing, and information provided regarding the roadway reconstruction, as described herein.

6.1 Pavement Evaluation

The types of primary defects observed in the pavement are most typically associated with a lack or loss of structural support in the pavement section. The structural support is derived from a combination of the bituminous concrete, gravel base course, and subgrade soils. The existing pavement section at the exploration locations typically consisted of about 3 to 4 inches of bituminous concrete and only 1 inch of aggregate base. In our opinion, the majority of the pavement section thicknesses, particularly the base course, are inadequate for structural support of the current traffic loading.

Considering the type and location of the primary pavement distresses, we believe the most likely cause of pavement failure to be insufficient structural support to accommodate the imposed traffic loading. In addition, the thin base course layer overlying high fines content subgrade soils, makes the pavement susceptible to freeze-thaw distress and subgrade softening. Once distresses appear in the pavement, the openings become pathways for water to infiltrate the pavement section. This water can saturate and soften the underlying fine-grained subgrade soils, resulting in further cracking and rutting.

6.2 Pavement Reconstruction

Based on the above data, we recommend full depth replacement of the pavement section. We recommend the restoration provide a pavement section consisting of a minimum of 4 inches of bituminous concrete and 12 inches of aggregate base. Because the distress to the pavement is so widespread across the width and length of the roadway, and the pavement section is insufficient to provide adequate support, drainage, or frost protection, we do not consider isolated repairs or milling/overlay to be viable alternatives.

The recommended pavement section is considerably thicker than the average existing pavement section. Due to the established entrance/exit lanes extending from Corporate Drive, underground utilities, and drainage structures, we expect that raising the grade of the roadway is not desired. Therefore, excavation to accommodate the new pavement section will need to extend into the existing subgrade soils. We expect an average of about 10 to 12 inches of subgrade soils will need to be removed.

Following removal of the existing pavement section and the necessary depth of subgrade soils, the resulting subgrade should be compacted as recommended below. After successful preparation of the subgrade, pavement base course material may be placed and compacted.

Bituminous concrete and aggregate base materials should be provided and installed per the requirements of the NHDOT Standard Specifications.

Overall grading of the roadway appears to provide adequate drainage. Therefore, we do not consider widespread road regrading or drainage improvements to be necessary. There are isolated depressions that cause water ponding and isolated pavement failure at catch basin locations that do not allow for proper collection of water runoff. These areas should be repaired.

We expect a properly constructed and maintained pavement section, prepared as outlined herein, would achieve a serviceable design life of about 20 years.

6.3 Alternative Reconstruction

As an alternative to full depth removal and replacement, the bituminous concrete could be left in place and milled/blended in place with the underlying aggregate base and subgrade soils. Based on our observations and laboratory testing, we estimate the in-situ blended material would create a serviceable, but not ideal, pavement base course. This blended material would create a finer graded product that does not meet the requirements of NHDOT base course. However, it would create a highly granular product that would be generally free draining. A new bituminous concrete surface would be placed over the milled/blended aggregate base.

The mill/blend alternative would likely be a more cost-effective solution due to the significant reduction of excavation and importing of base course materials. However, because the blended material would not be an ideal base course gradation, we would expect a lesser life expectancy and higher maintenance costs for the pavement. In addition, this method would not allow for inspection and preparation of underlying subgrade soils and, because no material is removed, there would be an overall raise in grade of the roadway. This would require adjusting entrance/exit paths, utility structures, and possibly curbing.

We expect a properly constructed mill/blend pavement, prepared as outlined herein, would achieve a serviceable design life of about 10 to 15 years.

6.4 Additional Pavement Considerations

Bituminous concrete pavements are not maintenance-free installations. Our recommendations for pavement reconstruction are based on achieving an average level of performance during the design life of the pavement, provided proper periodic maintenance, including cracking sealing, patching, surface sealing, and maintaining drainage systems, is performed. A preventative maintenance program should be planned to improve performance and slow deterioration of the pavement.

Due to elevated fines content, subgrade soils may be sensitive to disturbance due to increases in moisture content. Performance of the pavement will be highly dependent on reducing the potential for elevated moisture content of the subgrade soil. Continued, regular maintenance and sealing/repair of cracks, holes, or other defects will lessen the risk of subgrade softening, thus extending the life of the pavement.

6.5 Subgrade Preparation

Site preparation and grading should be performed in accordance with the following recommendations:

- A geotechnical engineer should directly observe subgrade preparation and grading activities.
- The site soils contain substantial proportions of fines and may degrade and/or become unworkable when subjected to construction traffic or other disturbance during wet conditions. As such, subgrade preparations, grading, and earthworks should be performed during a dry season if possible. The Contractor should be aware of these conditions and must take precautions to minimize subgrade disturbance. Such precautions may include diverting storm run-off or standing water away from construction areas, reducing traffic in sensitive areas, minimizing the extent of exposed subgrade if inclement weather is forecast, backfilling excavations as soon as practicable, grading (and compacting) exposed subgrades to promote surface water run-off, and maintaining an effective dewatering program, as necessary. Overexcavation to remove degraded or unworkable subgrade soils should be anticipated and budgeted (cost and schedule);
- The potential for adverse impacts due to water infiltration is high at this site due to the elevated fines content of the subgrade soils, which can lead to perched water conditions, potential for freeze-thaw heaving and settlement, and subgrade softening. Following removal of the existing pavement section and cutting to the new subgrade level, the subgrade surfaces should be sloped to provide positive drainage away from center of the road.
- The exposed subgrade soils should be proof-rolled using a minimum 10-ton smooth-drum, vibratory roller compactor. However, proof-rolling should not be performed if/when the exposed subgrade soils are wet (i.e., due to presence of groundwater, stormwater, perched water, etc.) because this may result in soil pumping and instability. Therefore, the proof-rolling efforts, including the number of passes and whether to employ static or vibratory methods, should be directed by the on-site geotechnical engineer, static methods should be anticipated based on the results of the explorations;
 - Any loose, soft, wet, and/or otherwise unsuitable soils (typically evidenced by rutting, pumping, and/or deflection of the subgrade) should be over-excavated to expose suitable soils, or other remedial measures should be taken, as approved by the on-site geotechnical engineer; and
 - Any over-excavations should be backfilled with properly placed and compacted Common Fill. Structural Fill and/or Crushed Stone may be required for fill placed over wet or easily disturbed subgrades.
- Structural Fill and Common Fill materials along with placement and compaction requirements are provided in the attached Tables.
- Pavement subgrades that are not immediately backfilled should be carefully evaluated as the time for pavement construction approaches. We recommend that the prepared pavement subgrades be proof-rolled with a loaded tandem-axle dump truck. Areas where unsuitable

conditions are located should be repaired by replacing the materials with properly compacted fill. If required, heavy-duty geotextile separation fabric or geogrid should be incorporated in the pavement section.

- The contractor should use caution in driving directly over the subgrade soils and/or base course materials, as this temporary condition causes considerably more load to be transferred to the subgrade soils. Drivers should avoid using the same entrance/exit paths repeatedly.
- Following completion of the subgrade to the satisfaction of the geotechnical engineer, base course may be placed and compacted to at least 95 percent of its maximum modified proctor density. The completed aggregate base course subgrade should be proof-rolled just prior to placement of bituminous concrete pavement;
- Proper groundwater control and stormwater management are necessary to maintain site stability. Groundwater should be removed in advance and continuously maintained at least 2 feet below the working construction grade until earthworks and/or backfilling are complete; and
- If groundwater seepage and/or wet soils due to shallow groundwater are observed, a ¾-inch minus crushed stone base should be placed atop the exposed subgrade soils. The stone should be immediately placed atop the undisturbed subgrade and then tamped with a plate compactor until exhibiting stable conditions. The stone should be completely wrapped with a geotextile filter fabric, such as Mirafi 140N or equal. The purpose of the stone base is to protect the wet subgrade, facilitate dewatering, and provide a dry/stable base upon which to progress construction.

6.6 Construction Monitoring and Quality Control Testing

The geotechnical engineer should be retained to review the site preparation, grading activities, and subgrade preparations, at a minimum. Similarly, quality control testing, including in-place field density and moisture tests, should be performed to confirm that the specified compaction is achieved. It is recommended that JTC be retained to provide earthwork construction monitoring and quality control testing services.

During pavement subgrade preparation and fill placement, 3 field density tests should be performed for every 5,000 square feet (per lift) of fill place, at a minimum. At least 3 tests should be performed on each lift even if the lift is less than 5,000 square feet.

APPENDIX A: LIMITATIONS

Explorations

- 1. The analyses and recommendations presented in this report are based in part upon the data obtained from widely-spaced subsurface explorations. Subsurface conditions between exploration locations may vary from those encountered at the exploration locations. The nature and extent of variations between explorations may not become evident until construction. If variations appear, it will be necessary to re-evaluate the recommendations of this report.
- 2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretation of widely-spaced explorations and samples; actual strata transitions are probably more gradual. For specific information, refer to the individual test pit and/or boring logs.
- 3. Water level readings have been made in the test pits and/or test borings under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time the measurements were made.

<u>Review</u>

- 4. It is recommended that John Turner Consulting, Inc. be given the opportunity to review final design drawings and specifications to evaluate the appropriate implementation of the geotechnical engineering recommendations provided herein.
- 5. In the event that any changes in the nature, design, or location of the proposed areas are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and conclusions of the report modified or verified in writing by John Turner Consulting, Inc.

<u>Construction</u>

6. It is recommended that John Turner Consulting, Inc. be retained to provide geotechnical engineering services during the installation phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

- 7. This report has been prepared for the exclusive use of the recipient for the identified project. All considerations are based on the available information and is in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.
- 8. This report has been prepared for this project by John Turner Consulting, Inc. This report was completed for preliminary design purposes and may be limited in its scope to complete an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to preliminary geotechnical design considerations.

APPENDIX B: RECOMMENDED SOIL GRADATION & COMPACTION SPECIFICATIONS

SIEVE SIZE	PERCENT PASSING BY WEIGHT
5-inch	100
¾-inch	60 - 100
No. 4	20 - 80
No. 200	0 - 10

TABLE 1: Structural Fill

NOTES:

- 1. For use as engineered fill at all locations, including below load bearing structures.
- 2. ¾-inch crushed stone may be used in wet conditions.
- 3. Structural Fill should be free of construction and demolition debris, frozen soil, organic soil, peat, stumps, brush, trash, and refuse;
- 4. Structural Fill should not be placed on soft, saturated, or frozen subgrade soils;
- 5. Structural Fill should be placed in lifts not exceeding 12 inches for heavy vibratory rollers and 8 inches for vibratory plate compactors.
- 6. Place and compact within \pm 3% of optimum moisture content.
- 7. Compact to at least 95% relative compaction per ASTM D1557.
- 8. The adequacy of the compaction efforts should be verified by field density testing.

TABLE 2: Common Fill

SIEVE SIZE	PERCENT PASSING BY WEIGHT
6-inch	100
¾-inch	60 – 100
No. 4	20 – 85
No. 200	0 – 25

NOTES:

- 1. For use as common/subgrade fill below the roadway and in roadway embankments. Should not be used below load bearing structures.
- 2. Place in lifts not exceeding 12 inches.
- 3. Maximum stone size should not exceed ½ the actual lift thickness.
- 4. Compact to at least 92% relative compaction per ASTM D1557.
- 5. The adequacy of the compaction efforts should be verified by field density testing.

Corporate Drive Reconstruction Portsmouth, New Hampshire JTC Project No. 21-04-095

APPENDIX C: SITE PLAN & EXPLORATION LOCATION PLANS



Notes:

- Test borings were performed on Nov. 9 and 10, 2021 under the direction of JTC. Test boring locations should be considered approximate.
 Refer to the Test Boring Logs for the subsurface conditions encountered at each boring location.
- 3. Not to Scale.

Client: Underwood Engineers 25 Vaughan Mall, Unit 1 Portsmouth, New Hampshire	Project: (Por
	TEST



Corporate Drive Reconstruction rtsmouth, New Hampshire

BORING LOCATION PLAN

APPENDIX D: TEST BORINGS LOGS & KEY TO SYMBOLS AND DESCRIPTIONS

	-	PROJECT: Corporate Drive Reconstruction	n				_ PF	sol	ECT NO.:	2	21-04-0)95	
	JOHN TURNER	CLIENT: Underwood Engineers											
	CONSULTING	LOCATION: See Test Boring Location Pla	<u>- Po</u> n	ortsmoutn	, NH			EL	EVATION:				
		DRILLER: Soil Exploration Corp.	<u> </u>					LC	DGGED BY:		AI	2	
		DRILLING METHOD: 4.25" I.D. HSA							DATE:	11/09/2	2021 -	11/10/2	.021
	No. B-1	DEPTH TO - WATER> INITIAL: \		-			AFTE	ER 2	4 HOURS:	▼ . .			
4 🔾				<u>ic</u>	t) t	e	ts <	00	TEST RESU	ILTS			
)ept feet		Description		rapł	evat fee	No.	oun oun	= #2	Plastic Lim	it ├──	L	.iquid	Limit
				Ū	Ē	ŝ	[_] ပ	%	Penetration	ent -) - 🕅	•	3	
- 0 -									10 2	0 30) 4	0 5	0
	ASI 3" Bitur	PHALT PAVEMENT]		নিদ্দি		\$\$01	20					7771	30
			-0.3			3501	30 100/5		///////	/////			
	4" Poorly C	Graded Sand with gravel (SP)					11			,,,,,			
			-0.7	Bab		SS02	18						
- 4 -	Brown, Silty Sa	and with gravel (SM); very dense					21						• • • • • • •
	-shat	tered rock in the spoon							••••••			• • • • • • • • •	•
	[GI	ACIAL DEPOSITS	-5.7-			\$\$03	11 14			////	777	////	3
	Light brown, Silty	Sand with gravel (SM); very dense				5505	38 34		<u> </u>				2
- 8 -	-shat	tered rock in the spoon				5504	21						63 —
						5504	20 37 31				<u> </u>		J
	D												
	Воп	ng terminated at 9.7 ft.											:
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Test	boring backfilled with s	ou cuttings upon completion.											

		PROJECT: Corporate Drive Reconstruction				PF	۶O٦	ECT NO.:	21-04-	.095
		CLIENT: Underwood Engineers								
」 `	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	ı, NH						
-		LOCATION: See Test Boring Location Plan								
LOC	GF BORING	DRILLER: Soil Exploration Corp.					_ L(A	<u>.P</u>
	No. B-2	DEPTH TO - WATER> INITIAL: \blacksquare				AFTE	ER 2	UATE 24 HOURS: ₹	/09/2021 -	11/10/2021
								TEST RESULT	s	
ft ft			ohic	et)	o ple	ints V	#20(Plaetic I imit	I	Liquid Limit
Der (fe		Description	Brap	eva fe	Sam Sam	Se Bl	‡ > °	Water Content	· ·	
!	ļ				<i>"</i>		%	Penetration -		2
- 0 -								10 20	<u>30 4</u>	10 50
ļ!	A I AST 3.5" Bitu	PHALI PAVEMENIJ		1	\$\$01	11 12		///////////////////////////////////////	7:	
!			 	9	5501	15 12			<u>}</u>	
	1" Poorly (AVEMENT BASE Graded Sand with gravel (SP)				9				
	· · · · · ·	0.4	/ :::::/	1	SS02	77				•
4	Brown Poorly Grad	[FILL] led Sand with silt and gravel (SP-SM):		8		9		F		•
ļ!	Diowii, 1001	medium dense		4						· · · · · · · · · · · · · · · · · · ·
	-shat	tered rock in the spoon				4				
[!	[GI				SS 03	3 4				
	Gray-tan, Silty	y Sand (SM), trace gravel; loose				6				:
- 8 -	-beo	comes medium dense			SS04	6 7				
!						9				
	Bori	ng terminated at 9.4 ft.		1						
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Test	Leven backfilled with	soil suttings upon completion		<u> </u>					<u> </u>	<u> </u>
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This information pertains only to this boring and should not be interpreted as being indicative of the site.

		PROJECT: Corporate Drive Reconstruction				PF	sol	ECT NO.:	21-04	-095	
		CLIENT: Underwood Engineers									
<u> </u>	JUTIN IUKINEK CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	n, NH							
		LOCATION: See Test Boring Location Plan					E	EVATION:			
lı oc		DRILLER: Soil Exploration Corp.					_ L(OGGED BY:	A	٩P	
		DRILLING METHOD: <u>4.25" I.D. HSA</u>						DATE: _	11/09/2021	- 11/10/20	021
	NO. D-3	DEPTH TO - WATER> INITIAL: ¥				AFTE	ER 2	24 HOURS:	<u></u>		
<u>ہ</u> ہے			<u>ic</u>	t ol	e	<u>ي</u> _ 1	8	TEST RESU	LTS		
ept		Description	aph	vat fee	д S		1 F	Plastic Limi	t	Liquid I	Limit
			อ้	Ee)	Š	ٽ	%	Water Conte	ent - ●	777	
								10 20	- <u>//////</u>) 30	∠∠/ 40 5(0
- 0 -	[ASI	PHALT PAVEMENT]	//			13				: :	
	4" Bitun	ninous concrete pavement	1111		\$\$01	18					
	[P	AVEMENT BASE]		1		18		-	• • • • • • • • • • • • • • • • • • • •	:	
	1" Poorly C	Graded Sand with gravel (SP)			\$\$02	21			• • • • • • • • • • • • • • • • • • • •	:	
		0.5				19 7			•••••	:	
- 4 -	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); dense							•••••		
									•••••	:	
	[GI	ACIAL DEPOSITS]				3 4			•••••	:	
	Gray-tan, Silty Sar	nd (SM), trace gravel; medium dense			SS03	7 9			•••••	:	
						7		////	ן	:	
- 8 -					SS04	9 13			3	·····	
						18				••••••	
	Bori	ng terminated at 9.5 ft.	1	1							
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Test	boring backfilled with s	soil cuttings upon completion.									

Figure

	_	PROJECT: Corporate Drive Reconstruction	n				_ PF	sol	ECT NO.:	21-04-	-095	
	JOHN TURNER	CLIENT: Underwood Engineers										
	CONSULTING	PROJECT LOCATION: <u>Corporate Drive</u>	- Por	tsmouth	, NH			FI	EVATION			
		DRILLER: Soil Exploration Corp.	1					L	DGGED BY:	A	ΔP	
	OF BURING	DRILLING METHOD: 4.25" I.D. HSA						-	DATE:	11/09/2021 -	- 11/10/20	021
	No. B-4	DEPTH TO - WATER> INITIAL: ₩					AFTE	ER 2	4 HOURS: 🐺			
4 ~				ic	t) ti	e	<u>ب</u> د	00	TEST RESUL	TS		
)ept feet		Description		raph	evat (fee	No.	alov	<pre>#2</pre>	Plastic Limit		Liquid I	Limit
				Ō	щ	ũ	– ပ	%	Penetration -	n - ● <i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	73	
- 0 -									10 20	30 4	<u>40 50</u>	0
	ASI 4" Bitur	PHALT PAVEMENT]	Į.	13.HZ		SS01	12 13			77)		
	[D	AVEMENT BASEL	-0.4				17 16			<u> </u>		
	1" Poorly C	Graded Sand with gravel (SP)	4	960			10				:	
		[FILL]	-0.5	360		SS02	12 10					
- 4 -	Brown, Silty San	d with gravel (SM); medium dense	5	32b			10		/	•••••	: : :	
	-shat	tered rock in the spoon	ע -5 5-1									
	[GI	ACIAL DEPOSITS]	5.5			<u>SS03</u>	4 4 6				÷	
	Dark gray, S	ilty Sand (SM); medium dense					7					
- 8 -						SS04	6				÷•••••••••••••••••••••••••••••••••••••	
							3					
	Bori	ng terminated at 9.5 ft.		:1:1:1:1:						•••••	:	
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- 28 -									<u> </u>			
Test	boring backfilled with s	soil cuttings upon completion.										

		PROJECT: Corporate Drive Reconstruction				_ PF	ROJ	ECT NO.:	21	-04-095	
		CLIENT: Underwood Engineers									
J	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	n, NH							
-		LOCATION: See Test Boring Location Plan					EL	EVATION:			
LOG	GOF BORING	DRILLER: Soil Exploration Corp.					_ LC	DGGED BY:		AP	
	No B-5	DRILLING METHOD: 4.25° I.D. HSA				AFT	ER 2		<u>11/09/20</u>	21 - 11/10/	/2021
<u> </u>			1		<u> </u>			TEET DEEL	<u>₹</u> 		
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Jep (fee		Description	rap	eva (fe∉	Nami l	Blo	# V	Plastic Lim	it ⊨	- Liquid	d Limit
			U U	Ш	S	0	%	Penetration) - <i>777</i>	/////	
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	[ASI	PHALT PAVEMENT]		1		7				۲۰۰۰	
	6" Bitur	ninous concrete pavement0.6			SS01	17 18				1	
	[P	AVEMENT BASE]	11111			12		-			÷
	I" Poorly C	Graded Sand with gravel (SP)		1	SS02	12 12			7		
- 4 -		[FILL]				10 10			⊿		÷
-	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); dense						• • •			:
	Brown, Silt	ty Sand (SM); medium dense						- 			
					SS03	10 10			1		÷
						11					
- 8 -		-becomes dense			0004	9			7777		
					\$\$04	11 20		<u> </u>			. .
						23					
	Bori	ng terminated at 9.7 ft.						-			
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Test	boring backfilled with	soil cuttings upon completion.									
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Figure

	-	PROJECT: Corporate Drive Reconstruction				PF	sol	ECT N	0.: _		21-04-	095	
] .	JOHN TURNER	CLIENT: Underwood Engineers	ortemout	h NH									
	CONSULTING	LOCATION: See Test Boring Location Plan	JIISIIIOUL	II, INII			EL	EVAT	ION:				
		DRILLER: Soil Exploration Corp.					LC	OGGED) BY:		A	Р	
		DRILLING METHOD: 4.25" I.D. HSA						D/	ATE:	11/09	9/2021 -	11/10/2	2021
	NO. B-0	DEPTH TO - WATER> INITIAL: ♀	8.0	'			ER 2	4 HOU	RS:	¥			
5.2			ic I	tion	e .	ts <	200	TEST	RESU	LTS			
Jept (feet		Description	rapł	evat (fee	No.	Blo	;# >	Plasti	c Limi	it ⊢ ont		₋iquid	Limit
			U	Ш	S	- 0	%	Penet	ration	i- 2	• 7//////	2	
- 0 -								1(<u>) 2</u>	0 3	<u>30 4</u>	0 5	50
	ASI 4" Bitur	PHALT PAVEMENT]	1111	1		13		: ////	: 	777			
		A VENENTE DA SEL		3	SS01	17 20		<u> </u>	<u> </u>			• • • • • • • •	÷
	LP 3" Poorly (AVEMENT BASE Graded Sand with gravel (SP)				21		-					
		0.7	EEE		SS02	12 6			1	•		•••••	
- 4 -	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); dense	E			7			2 · · · :		:	• •	÷
	Brown-gray Silty Sat	2.7								· · · · · · ·	•••••	•••••	÷
	Diowii giuy, biity bu	ia (Sivi), trace organies, medium dense			5502	4							
			E		3303	5					•••••	•	:
	Z	-becomes dense				9			7777	777	777	•	••••••
0	-	becomes dense			SS04	15 23							
			EEE			22						• •	<u>:</u>
	Bori	ng terminated at 9.7 ft.						-					
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Test	boring backfilled with s	soil cuttings upon completion.	•	•		•							

JOHNTURNER CONSULTING CLIENT: Underwood Engineers PROJECT LOCATION: Corporate Drive - Portsmouth, NH LOCATION: See Test Boring Location Plan ELEVATION:	/10/2021 uid Limit
PROJECT LOCATION: Corporate Drive - Portsmouth, NH LOG OF BORING No. B-7 PROJECT LOCATION: See Test Boring Location Plan ELEVATION:	/ <u>10/2021</u> uid Limit
LOG OF BORING No. B-7 LOCATION: See Test Boring Location Plan ELEVATION: DRILLER: Soil Exploration Corp. DRILLING METHOD: 4.25" I.D. HSA LOGGED BY: DATE: 11/09/2021 - 11 DESCRIPTION 4 DESCRIPTION Description Date: 11/09/2021 - 11 Description 0 Image: Content - 0 Image: Content - 0 Image: Content - 0 0 [ASPHALT PAVEMENT] Image: Content - 0 Image: Content - 0 Image: Content - 0 10 20 30 40 [FILL] Brown, Poorly Graded Sand with silt and gravel (SP-SM); 0.5 Image: Content - 0 Image: Content - 0 4 Brown, Poorly Graded Sand with silt and gravel (SP-SM); 0.5 Image: Content - 0 Image: Content - 0 Image: Content - 0	/10/2021 uid Limit
LOG OF BORING No. B-7 DRILLER: Soli Exploration Corp. DRILLING METHOD: 4.25" LD. HSA DEPTH TO - WATER> INITIAL: * DATE: 11/09/2021 - 11 I/09/2021 - 11 max DEPTH TO - WATER> INITIAL: * AFTER 24 HOURS: * max Description Description max Description Description 0 [ASPHALT PAVEMENT] 4 [PAVEMENT BASE] 1" Poorly Graded Sand with gravel (SP) 0.3 0.4 [FILL] Brown, Poorly Graded Sand with silt and gravel (SP-SM); 0.3	/10/2021 uid Limit
No. B-7 DEPTH TO - WATER> INITIAL: * AFTER 24 HOURS: * Image: Second	uid Limit
understand understand <th>uid Limit</th>	uid Limit
Hastic Limit Lic Description Image: Section Im	uid Limit
B E B B B B Contraction Water Content - • 0 [ASPHALT PAVEMENT] 10 20 30 40 4 [PAVEMENT BASE] 10 20 30 40 1 Poorly Graded Sand with gravel (SP) 0.5 5502 12 12 4 [FILL] 0.5 10 10 10 10 4 Brown, Poorly Graded Sand with silt and gravel (SP-SM); 0.5 12 12 12	50
Image: Constraint of the second se	
0 [ASPHALT PAVEMENT] 4" Bituminous concrete pavement 0.4 [PAVEMENT BASE] 10 1" Poorly Graded Sand with gravel (SP) 0.5 4 [FILL] Brown, Poorly Graded Sand with silt and gravel (SP-SM); 10	
4" Bituminous concrete pavement 0.4 [PAVEMENT BASE] 10 1" Poorly Graded Sand with gravel (SP) 10 [FILL] 0.5 Brown, Poorly Graded Sand with silt and gravel (SP-SM); 10	
Image: Constraint of the constr	
Image: Amount of the second	
4 [FILL] Brown, Poorly Graded Sand with silt and gravel (SP-SM);	
Brown, Poorly Graded Sand with silt and gravel (SP-SM);	
	:
Grav-tan, Silty Sand (SM) with gravel: medium dense	
- becomes loose	
Gray lean Clay (CL), stiff	
Poring terminated at 0.5 ft	
24	
Test boring backfilled with soil cuttings upon completion.	

This information pertains only to this boring and should not be interpreted as being indicative of the site.

		PROJECT: Corporate Drive Reconstruction				_ PF	sol	ECT NO.:	21-()4-095	
		CLIENT: Underwood Engineers									
יעו	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	n, NH							
-		LOCATION: See Test Boring Location Plan					EL	EVATION:			
LOG	GOF BORING	DRILLER: Soil Exploration Corp.					_ L(11/00/202	AP	2021
	No. B-8	DEPTH TO - WATER> INITIAL: ¥				AFTE	ER 2	4 HOURS: ₹	<u>11/09/202</u>	1 - 11/10/2	.021
				c			_	TEST RESU	LTS		
et)		Description	ohic	atio et)	o.	nts	#20(Plastic I imit		Liquid	l imit
(fe		Description	Gra	fe (fe	San	S B	v v	Water Conte	ent-●	Liquiu	
			–	ш			°	Penetration	- /////		
- 0 -	ΓΔΩΓ	PHALT PAVEMENTI	A			14			30	40 5	<u>,0</u>
	2" Bitun	ninous concrete pavement			SS01	14 17 15					•
	[][P	0.2		1		15		-			•
	1" Poorly C	Graded Sand with gravel (SP)			\$\$\$02	14					•
	L	0.3				9		 		····:	:
- 4 -	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); dense							::	···::	
	-shat	tered rock in the spoon									•
	-beo	comes medium dense5.3	V//		5503	3					
	[GL	ACIAL DEPOSITS]	$\langle / / /$	1	5505	6				••••	
	Gray	7, lean Clay (CL); stiff	<u> </u>							••••	
- 8 -	Bori	ng terminated at 7.3 ft.	1							••••	
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Test	boring backfilled with s	soil cuttings upon completion.	,								

This information pertains only to this boring and should not be interpreted as being indicative of the site.

	_	PROJECT: Corporate Drive Reconstruction				_ PF	ROJ	ECT NO.:		21-04-	.095	
		CLIENT: Underwood Engineers										
י ען	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	n, NH								
-		LOCATION: See Test Boring Location Plan						EVATION:				
LOG	GOF BORING	DRILLER: Soli Exploration Corp.							11/	A	<u>.P</u> 11/10/2	2021
	No. B-9	DEPTH TO - WATER> INITIAL: ¥				AFT	ER 2	4 HOURS:	<u> </u>	19/2021 -	11/10/2	2021
				c			_	TEST RES	ULTS	;		
et)		Description	phic	atio et)	o ple	ov Ints	#20(Plastic Lin	nit ⊢		Liquid	Limit
De (fe		Description	Gra	fe (fe	San	õ 🖻	v %	Water Cor	itent -	•		
			–	Ш			°	Penetratio	n - 👘		2	
- 0 -	Ι	PHALT PAVEMENTI	/		0001	15			<u>20</u>	30 4	10 5	<u>i0</u>
	2" Bitur	ninous concrete pavement	11111		5501	17 19		/////// r				•••••
	ГР	0.2				19					:	:
	1" Poorly C	Graded Sand with gravel (SP)			\$\$02	15 17			777	$\overline{\mathcal{M}}$:	:
		0.3			5502	17 20		///////	<u>///</u> :		•	:
- 4 -	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); dense							:	:	:	:
	-shat	tered rock in the spoon				10			:		:	:
	[GI	LACIAL DEPOSITS]			<u>SS03</u>	3		<u>///</u>				
	Gray-tan, Silty Sar	nd (SM), trace gravel; medium dense				5			:	••••••	:	: :
	Bori	ng terminated at 7.3 ft.							•		•••••••••••••••••••••••••••••••••••••••	:
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Test	boring backfilled with s	soil cuttings upon completion.										

4.	-	PROJECT: Corporate Drive Reconstruction				_ PF	SON	ECT NO.:	21-0	4-095	
	JOHN TURNER	PROJECT LOCATION: Corporate Drive - Pr	ortsmouth	n, NH							
		LOCATION: See Test Boring Location Plan					EL				
LO0	G OF BORING	DRILLER: Soil Exploration Corp.							11/09/202	<u>AP</u>	2021
	No. B-10	DEPTH TO - WATER> INITIAL: ₩				AFTE	ER 2		<u><u> </u></u>	11/10/2	2021
			υ	Lo 🔾	a		0	TEST RESU	LTS		
epth eet)		Description	aphi	vatio	n P D D D	low	< #2(Plastic Limi	it	Liquid	Limit
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- 0 -								10 2	0 30	<u>40 5</u>	50
	[ASI 5 5" Bitu	PHALT PAVEMENT]				20				7	
		AVEMENT DASEL			SS01	20 18 10			<u>/////</u>		
	1" Poorly C	Graded Sand with gravel (SP)				10			· · · · · · · · · · · · · · · · · · ·	•	÷
	-	0.d			\$\$02	8					÷
- 4 -	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); dense				0			••••••		••••••
	[GI	ACIAL DEPOSITS]			10000	4		-			
	Gray-tan, Silty Sar	nd (SM), trace gravel; medium dense -becomes loose			0202	3		-			
						3					
- 8 -	Bori	ng terminated at 7.6 ft.									
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- 28 -								<u> </u>			<u>.</u>
Test	t boring backfilled with s	soil cuttings upon completion.									_

	_	PROJECT: Corporate Drive Reconstruction				PF	soj	ECT NO.:		21-04	-095	
	JOHN TURNER	CLIENT: Underwood Engineers										
」	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	n, NH								
		DRILLER: Soil Exploration Corp							1: Y·		 4 P	
LOG	G OF BORING	DRILLING METHOD: 4.25" I.D. HSA					`	DATE	11/	/09/2021	- 11/10/2	2021
	No. B-11	DEPTH TO - WATER> INITIAL: ቛ				AFTE	ER 2	4 HOURS	: ¥			
			υ	uo 🦳	e	s s	00	TEST RE	SULT	3		
epth feet)		Description	aphi	rati	No.	3low	< #2(Plastic L	imit ⊦		Liquid	Limit
			อี	Ee)	Ő	ن ۳	%	Water Co	ontent	- • <i>\[]]]]]]</i>	<i>7</i> 73	
- 0 -								10	20	30	<u>40 5</u>	0
	ASI 6" Bitur	PHALT PAVEMENT]		Ţ		20		: ///////	: 7777	: 		71
		A VEMENT DASEL			SS 01	43 28]
	1" Poorly C	Graded Sand with gravel (SP)	1111			22			<u> </u>	<u> </u>	<u> </u>]
	· ·	0.7	1.1.1.1		SS02	25 25						<u> </u>
- 4 -	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); very	1.0110.01 1.0110.01			24		<u>_/////</u>	: :	<u>·////</u>	<u>/////</u>	4
		dense						 :	:	:	•	•
	-shat -bea	comes medium dense	1111		\$\$03	9 10		-	÷		:	
						15 12						
- 8 -	Bori	ng terminated at 7.7 ft										
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Test	voring backfuled with s	son cuttings upon completion.										



Figure

	7	PROJECT: <u>Corporate Drive Reconstruction</u>				PF	sol	ECT NO.:		21-04-0	095	
	JOHN TURNER	CLIENT: Underwood Engineers	1									
	CONSULTING	I OCATION: See Test Boring Location Plan	ortsmouth	1, NH			FI	EVATION				
		DRILLER: Soil Exploration Corp.						DGGED BY:		A	 Р	
	OF BORING	DRILLING METHOD: 4.25" I.D. HSA					-	DATE:	11/09	9/2021 -	11/10/2	.021
	No. B-13	DEPTH TO - WATER> INITIAL: ≆				AFTE	ER 2	4 HOURS:	¥.			
			c	no (e	s	00	TEST RESI	JLTS			
epth eet)		Description	aphi	vati eet	d p	unt lo	:#2	Plastic Lim	ıit ⊣	—	_iquid	Limit
<u>ح</u> ة ا		·	U U U	Щ Щ	Sa	မ္က ဂ္ဂ	× %	Water Con	tent -	•	71	
								Penetration	1- 🛛 20 3	<u> </u>	⊠ 05	0
- 0 -	[ASI	PHALT PAVEMENT]	hijer	ſ	0001	12				1	:	
	2" Bitun	ninous concrete pavement			\$\$01	14 16		<u> </u>	<u>////</u>	1		•
	[P	AVEMENT BASE]				45		-				1 97 —
	1" Poorly C	Graded Sand with gravel (SP)		C T	SS02	64 28						
- 4 -		[FILL]				21		/ <i>///////</i>		<u> </u>		! • • • • • • • •
	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); dense becomes very dense								:	:	
	-shat	tered rock in the spoon				7]			
	[GI	ACIAL DEPOSITS1			SS03	10 10 13]			:
	Gray-tan, Si	Ity Sand (SM); medium dense		4				-				
- 8 -	Bori	ng terminated at 7.3 ft.								:	:	
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28	1								<u>:</u>	<u>.</u>		•
Test	t boring backfilled with s	soil cuttings upon completion.										

		PROJECT: Corporate Drive Reconstruction				_ PF	sol	ECT NO.:	21-04-	.095	
	IOHN TURNER	CLIENT: Underwood Engineers									
)	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	ı, NH							
		DRILLER: Soil Exploration Corp.					. EL I (Δ		
LOG	G OF BORING	DRILLING METHOD: 4.25" I.D. HSA					`	DATE: 1	1/09/2021 -	· 11/10/2	.021
	No. B-14	DEPTH TO - WATER> INITIAL: 葉				AFTE	ER 2	24 HOURS: 🐺			
6.0			U	uo (i	e	ູ່ທ	00	TEST RESUL	ГS		
epth feet)		Description	aph	vati feet	No.	Slow	< #2	Plastic Limit	⊢	Liquid	Limit
			้อั	С Ш Ш	Sa	မ ဂ္ဂ	%	Water Conter	ıt - ●	773	
- 0 -								10 20	30 4	22 40 5 (0
	[ASI 2" Ditur	PHALT PAVEMENT]	1		SS01	14 14			\square		
	5 Ditui		11.1.1.1 11.1.1			14 14					
	LP 1" Poorly C	AVEMENT BASE] Graded Sand with gravel (SP)			SS02	12		-			
			1.1.1.1			11 9					
- 4 -	Brown, Poorly Grad	ed Sand with silt and gravel (SP-SM);	1.1.1.1			9			·····	:	•••••
		medium dense									•
	[GL	ACIAL DEPOSITS]		1	<u>\$\$03</u>	4 3 3			•	:	
	Gray-tan, lean Cl	ay (CL), trace gravel; medium stiff	$\langle / / \rangle$			3		-			• • • • • • • •
- 8 -		-becomes stiff			SS04	4 7			•	:	
						7 8					
	Bori	ng terminated at 9.4 ft.	<u> </u>								:
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Test	boring backfilled with s	soil cuttings upon completion.									

		PROJECT: Corporate Drive Reconstruction				PF	۶OJ	ECT NO.:	21-04-	095	
		CLIENT: Underwood Engineers									
」	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	n, NH							!
-		LOCATION: See Test Boring Location Plan					_ EL _ L (Δ		
LOC	3 OF BORING	DRILLER: Son Exploration Corp.					- L\	DATE: 11	A	P 11/10/2021	 I
	No. B-15	DEPTH TO - WATER> INITIAL: ¥				AFTE	ER 2	24 HOURS: ¥	0)/2021	11/10/2021	<u> </u>
							0	TEST RESULTS	3		_
pth eet)		Description	phic	atic eet)	ja oj	o v unts	#20	Plastic Limit	I	Liquid Lir	nit
ď٤		Description	Gra	lle	Sar	<u>ی ه</u>	× %	Water Content	- •	-	
┣───	<u> </u>		 					Penetration -	20 4	2 10 50	
- 0 -	A [AS]	PHALT PAVEMENT]				- ₂₂			- 30 -	0 30	
	4" Bitur	ninous concrete pavement			SS01	15 12		///////////////////////////////////////	1	•••••••••••••••••••••••••••••••••••••••	· · ·
	-[P	AVEMENT BASE]		1		12		-	•	•	· · ·
	1" Poorly C	Graded Sand with gravel (SP)	∦ ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		SS02	6 6			•	•	
4		[FILL]				6 6			•		
Ť	Brown, Poorly Grad	ed Sand with silt and gravel (SP-SM);	i fan fan fan fa Talair fan	9						: 	
	h -shat	tered rock in the spoon		Ĩ		3				:	
			\$ <i>\//</i>	1	\$505	- 3 3					· · · ·
	Gray-tan, lean Cl	av (CL), trace gravel; medium stiff	V//,	1		3		 			
- 8 -	-		V//	1	<u>8804</u>	23		L	•••		
	-		//</th <th>1</th> <th></th> <th>2 3</th> <th></th> <th> </th> <th></th> <th></th> <th>· · · </th>	1		2 3					· · ·
	Bori	ng terminated at 9.5 ft.	<u> </u>	1					·		
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Test	boring backfilled with s	soil cuttings upon completion.									

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Figure
L ,		PROJECT: Corporate Drive Reconstruction				PF	٤O٦	ECT NO.:	21-04-0	095
	JOHN TURNER	CLIENT: Underwood Engineers								
	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	h, NH			51			
		DRILLER: Soil Exploration Corp					_ ⊑⊾ _ L(A	
LOG)OF BORING	DRILLING METHOD: 4.25" I.D. HSA						DATE: 1	1/09/2021 -	11/10/2021
	No. B-16	DEPTH TO - WATER> INITIAL: ₩				AFTE	ER 2	24 HOURS: ¥		11,10,2
	'			ç			6	TEST RESULT	ſS	
et)		Description	phic	atio	o ple	ow	#20	Plastic Limit	I	_ iauid Limit
(fe		Description	Gra	lev A	San	S m	v v	Water Conten	t-•	
<u> </u>	 		+	Ш			• ·	Penetration -		2
- 0 -		ΡΗΔΙ Τ ΡΑVEMENTI						10 20	30 4	0 50
	4" Bitur	ninous concrete pavement		1	<u>SS01</u>	5			• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •
	ГР	OVEMENT BASEI	4	1		6 7				· · · · · · · · · · · · · · · · · · ·
	1" Poorly C	Graded Sand with gravel (SP)			5502	3			• • • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·
	1	0.5	5		3502	3			· · · : :	: :
- 4 -	Brown, Poorly Grad	ed Sand with silt and gravel (SP-SM);				4			•••••	: : :
		medium dense							•••••	: : :
	[GI		⁹		SS03	22				
	Gray-tan, Silt	y Sand (SM) with gravel; loose			0000	2 2		4		• • • • • • • • • • • • • • • • • • • •
	he	-becomes wet			5504	5				
- 8 -		comes medium dense			5504	. 6 6		[////]		
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	Bori	ng terminated at 9.5 ft.	1	1				 		
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Tesi	t horing backfilled with :	soil cuttings upon completion.			<u> </u>					

		PROJECT: Corporate Drive Reconstruction				_ PR	oJ	ECT NO.:	21-04-	.095	
		CLIENT: Underwood Engineers									
J	CONSULTING	PROJECT LOCATION: Corporate Drive - P	ortsmouth	n, NH							
-		LOCATION: See Test Boring Location Plan					EL			n	
LOG	G OF BORING	DRILLER: Son Exploration Corp.					L		1/00/2021 -	<u>.P</u> 11/10/20	021
	No. B-17	DEPTH TO - WATER> INITIAL: ₩				AFTE	R 2	4 HOURS: ₹		11/10/20	021
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Ľã€		Decemption	Gra	le €	Sar	S B	× %	Water Content	t - •		
				<u> </u>				Penetration - 10 20	30 4	⊠ 40 5(0
- 0 -	[ASI	PHALT PAVEMENT]		1		5		777			<u> </u>
	4" Bitun	ninous concrete pavement			SS01	5 4				:	
	[P	AVEMENT BASE]				7		-			
	1" Poorly C	Graded Sand with gravel (SP)		1	SS02	4 3		\square		<u>.</u>	
- 4 -		[FILL]				4					
	Brown, Poorly Graded	Sand with silt and gravel (SP-SM); loose 2.5									
	[GI	ACIAL DEPOSITS]			~~~~	5		[7777]			
	Gray-tan, Silt	y Sand (SM) with gravel; loose			SS03	6				÷	
	-beo	comes medium dense				8		-		÷	
- 8 -	Gray-tan	, lean Clay (CL); very stiff	$\langle / / \rangle$	1	SS04	9 9 10					
			\mathbb{V}/\mathbb{I}			10				·:···:	
	Bori	ng terminated at 9.5 ft.		1					••••	:	
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Test	t boring backfilled with s	soil cuttings upon completion.									

Recessed Cover Set in Concrete Top of Well, TO SYMBOLS AND DESCRIPTIONS Bentonite Pellets Capped Riser w/ Locking Cover Bentonite Slurry Endcap on Pipe SYMBOLS Packed in Sand Silica Sand, No Pipe (End Plug) Recessed Pipe Slotted Pipe w/ **Gravel Backfill** Covered Riser Concrete Seal Silica Sand, WELL blank PVC Pipe Riser Assorted Cuttings Sand Vibro-Core Sample Bulk/Grab Sample SOIL MOISTURE MODIFIERS The descriptor "saturated" should not be used (use "wet"). Auger Cuttings Dynamic Cone The descriptor "damp" should not be used (use "moist"). 3" Split Spoon dry to touch Penetrometer 2 CONSULTING Water Table JOHN TURNE (after 24 hours) Sample Ŋ Sonic or TYPICAL SYMBOL Absence of moisture; dusty, Damp but no visible water n) Visible free water Geoprobe Sample Descriptior Spoon Sample Standard Split Shelby Tube Water Table (at time of drilling) Vane Shear Rock Core KEY Moist Term Wet Dry \bowtie Poorly graded gravels or gravel-sand mixtures, little or no Inorganic clays of low to medium plasticity, gravelly clays, Inorganic silts, micaceous or diatomaceous fine sandy or Well-graded gravels or gravel-sand mixtures, little or no fines Organic clays of medium to high plasticity, organic silty Poorly graded sands or gravelly sands, little or no fines Inorganic silts and very fine sands, rock flour, silty or Well-graded sand or gravelly sands, little or no fines clayey fine sands or clayey silts with slight plasticity Organic silts and organic silty clays of low plasticity Clayey gravels, gravel-sand-clay mixtures Inorganic clays of high plasticity, fat clays *TYPICAL NAMES* Peat and other highly organic soils Silty gravels, gravel-sand mixtures Clayey sands, sand-clay mixtures sandy clays, silty clays, lean clays Silty sand, sand-silt mixtures silty soils, elastic silts clays, organic silts fines マシマ SYMBOI א ט ל Ъ ЫS С С Ξ SV S D SN SC Z CH HO С Р Р **GRAVELS WITH GRAVELS WITH** LESS THAN 5% **FINES** FINES CLEAN SANDS WITH LESS SANDS WITH OVER 15% FINES LIQUID LIMIT GREATER THAN 50% OVER 15% FINES CLEAN FINES LIQUID LIMIT 50% OR LESS HIGHLY ORGANIC SOILS MAJOR DIVISIONS SILTS & CLAYS SILTS & CLAYS FRACTION < No.4 FRACTION > No.4 SIEVE SIZE MORE THAN 1/2 MORE THAN 1/2 OF COARSE OF COARSE GRAVELS SIEVE SIZE SANDS OVER 50% > No.200 SIEVE SIZE OVER 50% < No.200 SIEVE SIZE COARSE-GRAINED SOILS FINE-GRAINED SOILS

PERCENT OR PORTIONS OF SOIL Alternating seams or layers of silt and/or clay More than one per foot of thickness One or less per foot of thickness and sometimes f. sand Small erratic deposit Lenticular deposit .⊆ 12 in. to 0.5 in. 0.5 in. to 1/16 Description > 1/16 in 12 in. Occasional: Frequent Parting: Stratum: Pocket: Varved Seam: Layer: Lens: Term RELATIVE DENSITY/CONSISTENCY Medium Stiff Consistency Standard Penetration Testing (SPT) N₆₀ based on blows per 12 Very Soft 16 - 30 2001 - 4000 Very Stiff Hard Silt (plastic) and Clay Soft 9 - 15 |1001 - 2000 |Stiff 501 - 1000 251 - 500 WR = Weight of Rods; WH = Weight of Hammer 0 - 250 4001+ Su N-Value 5 - 8 0 - 2 3 - 4 31+ **Relative Density** Medium Dense Gravel, Sand, and Silt Very Dense Very Loose Dense Loose N-Value 31 - 50 5 - 10 11-30 inches. 0 - 4 51+ 4.75 to 2.00 2.00 to 0.425 0.425 to 0.075 76.2 to 19.1 19.1 to 4.75 4.75 to 0.075 Below 0.075 76.2 to 4.75 Grain Size 305 to 76.2 n Millimeter Above 305 **RANGE OF GRAIN SIZES** No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200 No. 4 to No. 200 3/4" to No. 4 Below No. 200 Standard U.S. Star. Sieve Size 3" to No. 4 Above 12" to 3" 3" to 3/4" 12" **CLASSIFICATION** SILT & CLAY BOULDERS COBBLES medium fine coarse GRAVEL coarse SAND fine

REFERENCE: UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2488-93

APPENDIX E: GEOTECHNICAL LABORATORY TESTING REPORTS









































Tested By: Matt Watson

Checked By: Robert Faria



Tested By: Matt Watson

Checked By: Robert Faria

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Corporate Drive Reconstruction Portsmouth, New Hampshire JTC Project No. 21-04-095

APPENDIX F: SITE PHOTOGRAPHS



Corporate Drive Reconstruction Portsmouth, New Hampshire

SITE PHOTOGRAPHS













www.consultjtc.com

APPENDIX B

PEASE DEVELOPMENT AUTHORITY DIG PERMIT APPLICATION

PEASE DEVELOPMENT AUTHORITY DIG PERMIT						
A. PROJECT INFORMATIO	1		PDA USE ONLY			
Street Address:		Serial No.:				
City/Town:	Ŧ		Date Submitted:			
Description of Work: Date/Time app						
Depth of Excavation:			Date Terminated:			
Is Work on the Airfield?Yes	No	,				
Field marking will be completed by	(no later than date submit	ted):				
Scheduled start date (no earlier th	an 5 work days following da	ate submitted):				
B. APPLICANT INFORMATI	NC					
Company Name:		Contact:				
Address:						
Phone:		Email:				
C. INSTRUCTIONS						
Any organization conducting exca must first obtain a signed permit a PDA Director of Engineering. The provided or attached separately. I <u>must also stake out or otherwis</u> will notify the applicant. The appli section. <u>This approved form mu</u> not commenced by the specifie apply. If work extends past the	Any organization conducting excavation of soils, drilling, probing or any other work disturbing below grade material must first obtain a signed permit authorizing the work. This application form must be completed and submitted to the PDA Director of Engineering. The application must include a plan of the work area either sketched in the space provided or attached separately. If a separate sheet is attached, duplicate copies must be submitted. The applicant <u>must also stake out or otherwise mark the work area.</u> When all required clearances have been obtained, the PDA will notify the applicant. The applicant is responsible for compliance with any remarks listed in the clearance review section. This approved form must be in the possession of the operator performing the excavation of the work has not commenced by the specified termination date, the permit will become void and the applicant shall re-					
D. CLEARANCE REVIEW (F	DA USE)					
Area of Specia	Notice 🗌 *					
Dig Safe #	ORGAN	IZATION	INITIALS & DATE			
PDA - Electric						
Water						
Sewer						
Drains						
Communications						
Air Force	-					
COP - Water						
NHANG						

*Subject to approval by Air Force, EPA, and NHDES.

E.	SKETCH OF WORK AREA SHOWING	LOCATION OF STAKES,	FLAGGING, ETC.	SHOW NEAREST
	STREETS.			

F. Applicant Signature:

Date:

G. Approval: Approved by:

Date:

APPENDIX C

CATCH BASIN AND DRAIN MANHOLE DATA FORMS

DMH/CB DATA FORMS

PORTSMOUTH, NEW HAMPSHIRE

CORPORATE DRIVE, NH

July 2018

Underwood Engineers, Inc. Portsmouth, New Hampshire FILE NO 2184

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By: <u>JTB</u> Date: <u>617118</u>				Project No. 2	<u>2184</u>
}	DMH/CB Data	<u>ı Form</u>	Municij	pality <u>Portsmouth</u>	<u>, NH</u>
Location: Coporate Drive, Sta $21 + 82$	LT(RT)	ID	No. CBDMH #_	5107	
Diameter: 4 ft. Material: 6.BLOCK	Clear Opening:	24_in. (Metal Frame	e height: in	۱.
6 in. Cone in. Slab Top Corbel	height:	_ in Bric	ck Concrete	;	
Notes: (18" BELL 15" PIPE @ 6)				_
B. Rim to Sump Debris Depth: 5.8 ft.	A. Rim to Inv. Depth $1. \overset{\circ}{} 0.0$ ft. $2. \overset{\circ}{} 5.9$ ft. 3 ft. 4 ft. 5 ft.	Clock Position 	Size/ Material 15 [°] P-CP 12 [°] P-CP	Flow Depth	
Rim to H ₂ O Depth: ft.		1.			
Photo(s):					

Sector Sector

A day









· · · · · ·	By: JTB Date: 617118					
				Munici	Project No pality <u>Portsmou</u>	o. <u>2184</u> 1th, NH
1		DMH/CB Data	Form			
	Location: Coporate Drive, Sta $26 + 65$	(T)RT	ID	No. CBDMH #_	5115	
	Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u>	Clear Opening:	24in.(C	Metal Frame	e height: 8	in.
5 (in. Cone in. Slab Top Corbe	l height:	_inBric	k Concrete	:	
	Notes: MISC DEBRIS, BRICK+D	DIRT				
		A. Rim to Inv. Depth	Clock Position	Size/ Material	Flow Depth	
	Slab Top Cone	1. 3.7 ft.	_61	2"15" RCP		
an an anna ann		2ft.				
and and the second s		3ft.				
лого манимала у Солоского с Адагото с на стоя на намето у		4 ft.			·	
 second and the second a						
1	B.					
and the second s	Rim to Sump Debris Depth: 3.75 ft.					
	Rim to H ₂ O Depth: ft.		1.			
The second s	Photo(s):					
	:					




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By: JTB Date: 617118				Project No. 2184
	DMH/CB Data	ı Form	Municip	ality <u>Portsmouth, NH</u>
Location: Conorate Drive Sta $27 + 39$ (Î.TYRT	ID	No $(CB)/DMH #$	4253
Diameter: 4 ft Material B.BLOCK	Clear Opening:	24 in.(height: 8 in.
in Cone in Slah Ton Corbel	height.	in Bric	ek Concrete	
Notes:		_ mr Dr.	0000000	
	•	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
B. Bim to SumpDebris Depth: 4,9 ft.	A. Rim to Inv. Depth 1. <u>5.0</u> ft. 2 ft. 3 ft. 4 ft. 5 ft.	Clock Position 6	Size/ Material	Flow Depth
Rim to H ₂ O Depth: ft.		1.		
Photo(s):			★ *35.7	

Contraction of

By: JTB Date: 617118	DMH/CB Data	<u>ı Form</u>	Munici	Project No. <u>2184</u> pality <u>Portsmouth, NH</u>
Location: Coporate Drive, Sta $31 + 31$	LT)RT	ID	No. CBYDMH #_	3992
Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u> in. Cone <u>10</u> in Slab Top Corbel Notes:	Clear Opening: height: 2	24_in(C _in. <u>2</u> Bric	<i>Metal</i> Framk	e height: <u>8</u> in. 1 LAYER 8 BRICK
$\mathbf{B}.$ Rim to Sump ebris Depth: 5.9 ft. Rim to H ₂ O Depth: 4.1 ft. Photo(s):	A. Rim to Inv. Depth 1. <u>4.1</u> ft. 2ft. 3ft. 4ft. 5ft.	Clock Position 	Size/ Material 12 [°] RCP	Flow Depth

, <u>†</u>

. NER CONVERSION

110 June 100

By: JTG Date: 617118			Munici	Project N	o. <u>2184</u>
	DMH/CB Data	Form	Wunici	panty <u>Portsmo</u>	uin, infi
Location: Coporate Drive, Sta $31 + 32$	LT/RT	ID	No. CBYDMH #	3993	
Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u>	Clear Opening: _	24_in.@	DMetal Fram	e height: <u>8</u>	_in.
in. Cone <u>10</u> in. Clab Top Corbel	height:	in Bric	ck Concrete	2	
Notes:					
B. Rim to Sump Debris Depth: 5.7 ft. Rim to H ₂ O Depth: 4.3 ft. Photo(s):	A. Rim to Inv. Depth 1. <u>4.4</u> ft. 2. <u>4.2</u> ft. 3ft. 4ft. 5ft.	Clock Position 612 1217 2 2 1.	Size/ Material	Flow Depth	

By: JTB Date: 6/11/8			Munici	Project No. <u>2</u> pality Portsmouth,	<u>184</u> NH
	DMH/CB Data	Form	1	· · · · · · · · · · · · · · · · · · ·	
Location: Coporate Drive, Sta 34 + 31	LTIRT	ID	No CBDMH #_	4024	
Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u>	Clear Opening: _	24_in.(DMetal Frame	e height: <u>8</u> in.	
in. Cone <u>6</u> in. Slab Top Corbel	height:	in Brie	ck Concrete		
Notes: PIPE @ 12 FILLED W/ HI	EAVY DEBRIS				
B. Rim to Sump Debris Depth: 3.5 ft.	A. Rim to Inv. Depth 1. <u>4.3</u> ft. 4.3 2. <u>4.0</u> ft. 4.0 3ft. 4ft. 5ft.	Clock Position 6 	Size/ Material 12-X RCP 12-X PCP	Flow Depth	·
Rim to H ₂ O Depth: 3.7 ft.		1.			
Photo(s):		,	Υ (_{10,}]		

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A CONTRACTOR OF A CONTRACT OF A CONTRACT



By: \underline{JTB} Date: $\underline{61618}$ Location: Coporate Drive, Sta $\underline{34 + 69}$ Diameter: $\underline{4}$ ft. Material: $\underline{6.6LOCC}$ if. Cone in. Slab Top Corbel Notes:	DMH/CB Data H LT/RT Clear Opening: height:	<u>Form</u> ID 1 24in.C in. <u>6</u> Bric.	Municip No. <i>CBDMH</i> # <i>DMetal</i> Frame k Concrete	Project No. <u>2184</u> ality <u>Portsmouth, NH</u> <u>4073</u> height: <u>8</u> in. 2 LAYERS BEJCK VERTICLE
$B.$ $Rim to H_2O Depth: 4.6 ft.$	A. Rim to Inv. Depth 1. 4.05 ft. 2. 4.55 ft. 3ft. 4ft. 5ft.	Clock Position 6 2, 1.	Size/ Material 15-X FCP 12`RCP	Flow Depth
Photo(s):				

By: JTB Date: 616118	Duringt No. 2194
DMH/CB Dat	Municipality <u>Portsmouth, NH</u>
Location: Coporate Drive, Sta $34 + 90 LT/RT$	ID No $CBDMH \#$ 4072
Diameter: <u>4</u> ft. Material: <u>B,BWCK</u> . Clear Opening:	in. <u>CIMetal</u> Frame height: <u>8</u> in.
in. Cone in. Slab Top Corbel height: \leq	_ in. 2 Brick Concrete BRICK
Notes: TITES FILLED ON FULLES & O	
B. A. A. B. A.	$= \frac{Clock Size/ Flow Position Material Depth \frac{12^{2} PCP}{\frac{6}{12} i2^{2} RCP}$
Rim to Sump Debris Depth: 3.6 ft.	,
Rim to H ₂ O Depth: ft.	1. ↓ []
Photo(s):	

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By: JTB Date: 611/18	DMH/CB Data	Form	Municip	Project No. <u>2184</u> pality <u>Portsmouth, NH</u>
Location: Coporate Drive, Sta $35 + 21$	LT/RT)	II	D No. CB/DMH #_	4081
Diameter: 4 ft. Material: B.BLOCK	Clear Opening:	24 in.(<i>CIMetal</i> Frame	e height: <u>8</u> in.
in. Cone in. Slab Top Corbel	height:	_inBr	ick Concrete	
Notes: CONE MADE FROM B.BLOCK	C PIPE F	ened mi	DEBRIS	
B. Rim to Sump/Cebris Depth: 4.5 ft.	A. Rim to Inv. Depth 1.≈ <u>4.9</u> ft. 2ft. 3ft. 4ft. 5ft.	Clock Position 	Size/ Material 12-15 RCP	Flow Depth
Rim to H₂O Depth: <u> </u>		1	• 🖌 📘	
Photo(s):				

-	By: JTB Date: 6/11/8					
	т			Munici	Project No. <u>21</u> pality <u>Portsmouth, N</u>	<u>84</u> \H
5 1		DMH/CB Data	a Form			
	Location: Coporate Drive, Sta $38 + 01$	LT(RT)	ID	No. <i>CB/DMH</i> #	3821	
	Diameter: <u>4</u> ft. Material: <u><u><u></u></u></u>	Clear Opening:	<u>24</u> in.(CDMetal Fram	e height: <u>8</u> in.	
9 ·	in. Conein(Slab Top) Corb	el height:	_inBri	ck Concrete	2	
	Notes:					
The first state of the second state of the sec	FRAME A B CORBEL Slab Top Cone	A. Rim to Inv. Depth 1. 3.15 ft. 2ft.	Clock Position 6	Size/ Material 12 ^{°°} RP	Flow Depth	
		3ft.				
and the second sec		4ft. 5ft.				
م ال ات. مربعہ میں میں میں ا	B.					
	Rim to Sump/Debris Depth: $\frac{4.8}{5}$ ft.					
	Rim to H ₂ O Depth: $\frac{3, 2-5}{1}$ ft.		1.	↓		
	Photo(s):					
شمىئامىسىسە" مىتارىلىنىڭ ئىمىيامىنىنىڭ مىرىيىسىغا ئىمىئامىسىسە" مىتارىلىنىڭ						

	By: <u>JTB</u> Date: <u>6/1/18</u> Project No. 218
1997	Municipality Portsmouth, NI DMH/CB Data Form
	Location: Coporate Drive, Sta $38 + 01 LT RT$ ID No. CBDMH # 3822
	Diameter: <u>4</u> ft. Material: <u>B,BLOCK</u> Clear Opening: <u>24</u> in <i>CIMetal</i> Frame height: <u>8</u> in.
	in. Cone 8 in. Slab Top Corbel height: in Brick Concrete
	Notes:
Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction Construction	B.
	Rim to Sumple Depth: 8.7 ft.
	Rim to H ₂ O Depth: 6.8 ft.
	Photo(s):



By: <u>Ortho</u> Date. <u>Ortho</u>	DMH/CB Data	Form	Municij	Project No. <u>21</u> pality <u>Portsmouth, N</u>
Location: Coporate Drive, Sta <u>44</u> + <u>83</u>	LTIRT	ID	No. <i>CB/DMH</i> #) 3649
Diameter: 4 ft. Material: B.BLOCK	Clear Opening:	30_in.(DMetal Fram	e height: <u>6</u> in.
in. Cone 12 in. Slab Top Corbel	height: 20	_inBri	ck 20 Concrete	1-12"RC RISE
Notes:				
B.	A. Rim to Inv. Depth 1. $\frac{6.9}{\text{ft.}}$ 2. $\frac{6.85}{\text{ft.}}$ 3. $\frac{6.7}{\text{ft.}}$ 4ft. 5ft.	Clock Position 6 12 1 	Size/ Material $12^{+}X^{+}PCP$ $12^{+}X^{+}PCP$ $10^{+}PVC$	Flow Depth
Rim to <i>SumpDebris</i> Depth: <u>6.9</u> ft.			×+-+/	
Rim to H ₂ O Depth: 6.85 ft.		1.		
Photo(s):				

By: JTB Date: 5/30/18				
	DMH/CB Dat	a Form	Munici	Project No. <u>218</u> pality <u>Portsmouth, NI</u>
Location: Coporate Drive, Sta 46 + 82	LT/RT)	ID	No. <i>СВА</i> ДМН #) 3491
Diameter: <u>4</u> ft. Material: <u>B.BLCCK</u>	Clear Opening:	<u>30</u> in ((DMetal Frame	e height: $\underline{4}$ in.
in. Cone <u></u> in. (Slab Top) Corbe	l height: <u>10</u>	inBric	ck <u>10</u> Concrete	5-0 bouch
Notes:				
	A. Rim to Inv. Depth	Clock Position	Size/ Material	Flow Depth
Slab Top	1. 5.8 ft.	6	12 RCP	
	2. <u>5.8</u> ft.	12	12°RUP	
	3ft.			
	4ft.			. <u> </u>
	5ft.			
		2		
B.				
Rim to Sump Debris Depth: 5.8 ft.			/	
Rim to H ₂ O Depth: 5.7 ft.		1.		
Photo(s):				

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| By: JTB Date: 5/29/18                                                    |                                                                                               |                   |                                                                 | Project No. <u>218</u>                          | <u>34</u> |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------|-------------------------------------------------|-----------|
| · · · · · ·                                                              | DMH/CB Data                                                                                   | a Form            | Munici                                                          | pality <u>Portsmouth, N</u>                     | H         |
| Location: Coporate Drive, Sta 49 + 85                                    |                                                                                               | ID                | No. CBLDMH #                                                    | )3498                                           |           |
| Diameter: 4 ft. Material: B. Block                                       | Clear Opening:                                                                                | _30in.@           | Metal Frame                                                     | e height: <u>6</u> in.                          |           |
| in. Cone in. Slab Top Corbel                                             | height: 6                                                                                     | in. K Bric        | k <u>6</u> Concrete                                             | 1(6") RC RISE                                   | 2         |
| Notes:                                                                   |                                                                                               |                   |                                                                 |                                                 |           |
| B. <image/> Rim to Sump/Debris Depth: 6.0 ft. Rim to H2O Depth: 5.25 ft. | A.<br>Rim to<br>Inv. Depth<br>1. $5.4$ ft.<br>2. $5.0$ ft.<br>3. $5.75$ ft.<br>4 ft.<br>5 ft. | Clock<br>Position | Size/<br>Material<br><u>18° PLP</u><br><u>8° PVC</u><br>15° PVC | Flow<br>Depth<br>$\frac{8}{2}$<br>$\frac{2}{8}$ |           |
| Photo(s):                                                                |                                                                                               |                   |                                                                 |                                                 |           |
|                                                                          |                                                                                               |                   |                                                                 |                                                 |           |

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| By: JTB Date: 6/1118                            |                            |                   |                     | Duringt Ma. 2194             |
|-------------------------------------------------|----------------------------|-------------------|---------------------|------------------------------|
|                                                 |                            | D                 | Munici              | pality <u>Portsmouth, NH</u> |
| i<br>119 Q2                                     | DMH/CB Data                | Form              |                     | 2465                         |
| Location: Coporate Drive, Sta $91 + 92$         | _(L]//RT                   | ID                | No. <i>CB/DMH</i> # |                              |
| CDiameter: <u>2</u> ft. Material: <u>RC</u>     | Clear Opening:             | <u>29</u> in.((   | CI/Metal Fram       | e height: <u>D</u> in.       |
| in. Cone in. Slab Top Corbe                     | l height:                  | _inBric           | k Concrete          | e                            |
| Notes:                                          |                            |                   |                     |                              |
|                                                 | A.<br>Rim to<br>Inv. Depth | Clock<br>Position | Size/<br>Material   | Flow<br>Depth                |
| Slab Top                                        | 1. <u>1.9</u> ft.          | 6                 | 12 RCP              |                              |
|                                                 | 2ft.                       |                   |                     |                              |
|                                                 | 3ft.                       |                   |                     |                              |
|                                                 | 4 ft.                      |                   |                     |                              |
|                                                 | 5ft.                       | <u>,</u>          |                     |                              |
|                                                 |                            |                   |                     |                              |
| B.                                              |                            |                   | )                   |                              |
| Rim to Sump Debris Depth: $\frac{2.5}{1.5}$ ft. |                            |                   |                     |                              |
| Rim to H <sub>2</sub> O Depth: $1.8$ ft.        |                            | 1.                |                     |                              |
| Photo(s):                                       |                            |                   |                     |                              |
|                                                 |                            |                   |                     |                              |
|                                                 |                            |                   |                     |                              |
|                                                 |                            |                   |                     |                              |
|                                                 |                            | 2                 |                     |                              |
|                                                 |                            |                   |                     |                              |
|                                                 |                            | Le Start          |                     |                              |
|                                                 |                            |                   |                     |                              |

| By: $\underline{JTB}$ Date: $\underline{61118}$<br>Location: Coporate Drive, Sta $\underline{50} + \underline{12}$ (Diameter: $\underline{4}$ ft. Material: $\underline{RC}$ | <u>DMH/CB Data</u><br><i>LT)RT</i><br>Clear Opening:                      | <u>Form</u><br>ID<br><u>24</u> in.( | Municij<br>No. <i>CB/DMH</i> #_<br>CDMetal Frame | Project No. <u>2184</u><br>pality <u>Portsmouth, NH</u><br><u>3496</u><br>e height: <u>8</u> in. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------|
| in. Cone <u>8</u> in Slab Top Corbel                                                                                                                                         | height: 10                                                                | _ in Bric                           | k <u>10</u> Concrete                             | 1-10"RC RISER                                                                                    |
| Notes:                                                                                                                                                                       |                                                                           |                                     |                                                  |                                                                                                  |
| B.         Rim to Sump Debrie Depth:                                                                                                                                         | A.<br>Rim to<br>Inv. Depth<br>1. 3.65 ft.<br>2ft.<br>3ft.<br>4ft.<br>5ft. | Clock<br>Position<br>6              | Size/<br>Material<br>12 <sup>°</sup> PCP         | Flow<br>Depth                                                                                    |
| Rim to H <sub>2</sub> O Depth: $3.7$ ft.                                                                                                                                     |                                                                           | 1.                                  |                                                  |                                                                                                  |
| Photo(s):                                                                                                                                                                    |                                                                           |                                     |                                                  |                                                                                                  |

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| By: JTB Date: 6/118                                 |                                                                               |                        |                   | Project No. 2184              |
|-----------------------------------------------------|-------------------------------------------------------------------------------|------------------------|-------------------|-------------------------------|
|                                                     |                                                                               |                        | Munici            | pality Portsmouth, NH         |
|                                                     | DMH/CB Data                                                                   | a Form                 |                   |                               |
| Location: Coporate Drive, Sta <u>52</u> + <u>32</u> | LTRT                                                                          | ID                     | No CB DMH #       | 3268                          |
| Diameter: <u>4</u> ft. Material: <u>RC</u>          | Clear Opening:                                                                | in. (                  | Metal Fram        | e height: $\underline{8}$ in. |
| in. Cone 8 in. Slab Top Corbe                       | l height:                                                                     | _ in Bric              | ck Concrete       | 2                             |
| Notes:                                              |                                                                               |                        |                   |                               |
| B.                                                  | A.<br>Rim to<br>Inv. Depth<br>1. 3.35 ft.<br>2 ft.<br>3 ft.<br>4 ft.<br>5 ft. | Clock<br>Position<br>6 | Size/<br>Material | Flow<br>Depth<br>Ya           |
| Rim to Sump(Debris Depth: $3, 7$ ft.                |                                                                               |                        |                   |                               |
| Rim to H <sub>2</sub> O Depth: $3.3$ ft.            | •                                                                             | 1.                     | ¥ .               |                               |
| Photo(s):                                           |                                                                               |                        |                   |                               |
|                                                     |                                                                               |                        |                   |                               |

| By: <u>JTB</u> Date: <u>611118</u><br>Location: Coporate Drive, Sta <u>52</u> + <u>32</u><br>Diameter: <u>4</u> ft. Material:<br>in. Cone <u>8</u> in. Slab Top Corbel<br>Notes: | DMH/CB Data :<br>LT(RT)<br>Clear Opening:<br>height:                            | Form<br>ID<br>24 in.@<br>in Bric | Munici<br>No <i>CBDMH</i> #<br><i>IJMetal</i> Fram<br>k Concrete | Project No. <u>2184</u><br>pality <u>Portsmouth, NH</u><br><u>3269</u><br>e height: <u>8</u> in. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| B.<br>Rim to Sump Debris Depth: 5.25 ft.                                                                                                                                         | A.<br>Rim to<br>Inv. Depth<br>1. 3.75 ft.<br>2. 3.6 ft.<br>3ft.<br>4ft.<br>5ft. | Clock<br>Position<br>            | Size/<br>Material<br>12 <sup>°</sup> RCP<br>12 <sup>°</sup> RCP  | Flow<br>Depth                                                                                    |
| Rim to H <sub>2</sub> O Depth: $3^{\circ}$ ft.                                                                                                                                   |                                                                                 | I.↓                              | 35                                                               |                                                                                                  |
|                                                                                                                                                                                  |                                                                                 |                                  |                                                                  |                                                                                                  |

| By: JTB Date: 5/29/18                             |                                                                                                                                                          |                                            |                                                                                                       | Project No. <u>2</u> | .184 |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------|------|
|                                                   | DMH/CB Date                                                                                                                                              | Form                                       | Munici                                                                                                | pality Portsmouth,   | NH   |
|                                                   |                                                                                                                                                          |                                            | <u> </u>                                                                                              | 1770                 |      |
| Location: Coporate Drive, Sta $52 + 35$           | LT(RT)                                                                                                                                                   | ID                                         | No. <i>CB(DMH</i> #                                                                                   | ) 52 10              |      |
| Diameter: <u>4</u> ft. Material: <u>6</u> , Black | Clear Opening:                                                                                                                                           | <u>    30     in.((</u>                    | Metal Fram                                                                                            | e height: <u> </u>   |      |
| in. Cone <u>12</u> in. Clab Top Corbel            | height: <u>6</u>                                                                                                                                         | _ in2 Bric                                 | ck <u> </u>                                                                                           | , I-4" RC RISE       | ER   |
| Notes:                                            |                                                                                                                                                          |                                            |                                                                                                       |                      |      |
| B.<br>Bim to Sump/Debris Depth: 5.2 ft            | A.       Rim to         Inv. Depth       1. $5.2$ ft.         1. $5.2$ ft.       2. $5.1$ ft.         2. $5.0$ ft.       4 ft.         5 ft.       5 ft. | Clock<br>Position<br>6<br>12<br>3<br><br>2 | Size/<br>Material<br><u>18<sup>°</sup>rcp</u><br><u>18<sup>°</sup>rcp</u><br><u>8<sup>°°</sup>Pvc</u> | Flow<br>Depth<br>≈ 6 |      |
| Rim to Sumproephs Depth It.                       |                                                                                                                                                          | 1.                                         |                                                                                                       |                      |      |
|                                                   |                                                                                                                                                          |                                            | ا                                                                                                     |                      |      |
|                                                   |                                                                                                                                                          |                                            |                                                                                                       |                      |      |

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| BY: JTB | Date: | 5/29/1 | 8 |
|---------|-------|--------|---|
| ¥       |       |        |   |

| Project No. <u>2184</u>     |
|-----------------------------|
| Municipality Portsmouth, NH |



| By: 179 Date: 5131118                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                 |                       |                                                                 |                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------|---------------------------------------------------------|
| тъ,<br>ј                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | DMH/CB Data                                                                                     | <u>Form</u>           | Munici                                                          | Project No. <u>2184</u><br>pality <u>Portsmouth, NH</u> |
| Location: Coporate Drive, Sta $54 + 67$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | LTRT                                                                                            | ID                    | No. <b>CB</b> /DMH #                                            | 3294                                                    |
| Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Clear Opening: _                                                                                | in. (C                | Metal Fram                                                      | e height: <u>8</u> in.                                  |
| in. Cone in. Slab Top Corbel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | height: <u>6</u>                                                                                | in Bric               | k <u>6</u> Concrete                                             | 1-6" RC FISER                                           |
| Notes:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                 |                       |                                                                 |                                                         |
| FRAME $A = B$ CORBEL       Slab Top         Oone       Oone         Oone       Oone         Slab Top       Oone         Oone       Oone         Slab Top       Oone         Oone       Oone         Slab Top       Oone         Oone       Oone      < | A.<br>Rim to<br>Inv. Depth<br>1. <u>4.0</u> ft.<br>2. <u>4.0</u> ft.<br>3 ft.<br>4 ft.<br>5 ft. | Clock<br>Position<br> | Size/<br>Material<br>12 <sup>°</sup> ECP<br>12 <sup>°</sup> ECP | Flow<br>Depth                                           |
| Photo(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                 |                       |                                                                 |                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                 |                       |                                                                 |                                                         |



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| By: <u>JTB</u> Date: <u>5731118</u><br>Location: Coporate Drive, Sta <u>55</u> + <u>026</u><br>Diameter: <u>4</u> ft. Material: <u>PC</u> | <u>DMH/CB Data</u>                                                               | Form<br>ID<br>24 in        | Munici<br>No. <i>CB/DMH #</i>                                   | Project No. $2184$<br>pality Portsmouth, NH<br>3296<br>e height: 8 in.<br>1-6 RCRISER |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Notes:                                                                                                                                    | neight:                                                                          | _ III, DIIC                |                                                                 | · · ·                                                                                 |
| B.<br>B.<br>B.<br>B.<br>B.                                                                                                                | A.<br>Rim to<br>Inv. Depth<br>1. 3.35 ft.<br>2. 3.35 ft.<br>3ft.<br>4ft.<br>5ft. | Clock<br>Position<br>6<br> | Size/<br>Material<br>12 <sup>°</sup> PLP<br>12 <sup>°</sup> PLP | Flow<br>Depth                                                                         |
| Rim to H <sub>2</sub> O Depth: 3.4 ft.                                                                                                    |                                                                                  | 1.                         |                                                                 |                                                                                       |
| Photo(s):                                                                                                                                 |                                                                                  | ·                          |                                                                 |                                                                                       |
|                                                                                                                                           |                                                                                  |                            |                                                                 |                                                                                       |

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By: JTB Date: 5/34/18

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------|------------------------------------|---------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ·.<br>}                                                 | DMH/CB Data                                                                                | Form                             | Municip                                 | anty <u>Portsmout</u>              | <u>n, NH</u>  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Location: Coporate Drive, Sta $58 + 03$                 | LT/CT                                                                                      | ID                               | No. CBDMH #_                            | 3068                               |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Diameter: <u>4</u> ft. Material: <u>6.61vck</u>         | Clear Opening: _                                                                           | <u>20</u> in.(                   | Metal Frame                             | height:                            | in.           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | in. Cone in. Slab Top Corbel !                          | height:                                                                                    | inBrio                           | ck Concrete                             |                                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Notes: Some debris lay above<br>Dirt/leaves. within pip | es and on                                                                                  | R4C<br>bottom                    | 6 has 18"<br>(Polyethylene              | bell<br>1 liner)                   |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | FRAME A B<br>CORBEL<br>Slab Top<br>Cone                 | A.<br>Rim to<br>Inv. Depth<br>1. $5 \rightarrow 5 + 9 + 9 + 9 + 9 + 10 + 10 + 10 + 10 + 1$ | Clock<br>Position<br>6<br>11<br> | Size/<br>Material<br>Ia``RCP<br>Ia``RCP | Flow Depth $1 - 2^{1}$ $1 - 2^{1}$ |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | В.                                                      |                                                                                            |                                  | )                                       |                                    |               |
| - Contraction of the local division of the l | Rim to <i>SumpDebris</i> Depth: <u>5,0</u> ft.          |                                                                                            |                                  | ×-+-                                    |                                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rim to H <sub>2</sub> O Depth: <u> </u>                 |                                                                                            | 1.                               |                                         |                                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Photo(s):                                               |                                                                                            |                                  |                                         |                                    |               |
| and the second se                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                         |                                                                                            |                                  |                                         |                                    |               |
| and a second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                         |                                                                                            |                                  |                                         |                                    |               |

See 2

By: JTB Date: 5/24/18

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Project No. <u>2184</u> Municipality <u>Portsmouth, NH</u>

|                                                       | DMH/CB Data                                                                      | Form                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                         |
|-------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Location: Coporate Drive, Sta $58 + 35$               | LT/RT                                                                            | ID                              | No CB DMH #_                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3067                                    |
| Diameter: <u>4</u> ft. Material: <u>B.Block</u>       | Clear Opening:                                                                   | 20_in.                          | Metal Frame                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | height: in.                             |
| in. Cone in. Slab Top Corbel 1                        | height:                                                                          | in Bric                         | k Concrete                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                         |
| Notes: No HaO visible, atleast<br>Both pipes fined wi | 3" debris<br>misc debr                                                           | Pipe (                          | 2 1 rothing<br>hylene liner                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <u> </u>                                |
| B.         Rim to Sump Debris Depth: 3.15 ft.         | A.<br>Rim to<br>Inv. Depth<br>1. ≈ 4.1 ft.<br>2. 3.7 ft.<br>3ft.<br>4ft.<br>5ft. | Clock<br>Position<br>6<br>1<br> | Size/<br>Material<br>13 FCP<br>13 15 Performed<br>13 15 Pe | Flow<br>Depth<br>E 12 <sup>-4</sup> CmP |
| Rim to H <sub>2</sub> O Depth: ft.                    |                                                                                  | 1.                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                         |
| Photo(s):                                             |                                                                                  |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                         |
|                                                       |                                                                                  |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                         |









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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             | DMILICD Date                             | Eann              | Munic                                 | ipality Portsmouth, NH |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                                           |                                          | <u>I FOIM</u>     | No COMMIN                             | 305 3004               |
| Vitament                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Location: Coporate Drive, Sta <u>0</u> + 0. |                                          | ୍ଲ<br>ଅଧ୍ୟ .      |                                       | 8                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Diameter: 1 ft. Material: 0.0000            | Clear Opening:                           | 1n. ((            | Metal Fran                            | $1-6^{\circ}$ CTSEC    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | in. Conein. Slab Top Corbe                  | I height: 0                              | _ m Brie          | ck <u>U</u> Concret                   | erori                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Notes:                                      |                                          |                   |                                       |                        |
| ar an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                             | A.<br>Rim to<br>Inv. Depth               | Clock<br>Position | Size/<br>Material                     | Flow<br>Depth          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Cone                                        | 1. <u>3.8 ft.</u>                        | 6                 | 12 RCP                                | 1-2                    |
| and the second se |                                             | 2ft.                                     | <u></u>           |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             | 3ft.                                     |                   |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             | 4ft.                                     | ·                 |                                       |                        |
| Accession of the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                             | 5ft.                                     |                   |                                       | <i>i</i>               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             |                                          |                   |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             |                                          | 6                 |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | в. 56                                       |                                          |                   | )                                     |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Rim to Sumplicebris Depth: $3.0$ ft.        |                                          | ×.                |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Rim to H <sub>2</sub> O Depth: $5.5$ ft.    |                                          | 1.                |                                       |                        |
| and the second se | Photo(s):                                   | an a |                   |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             |                                          |                   | als.                                  |                        |
| and Autority of the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1643 A.                                     |                                          |                   |                                       |                        |
| į .<br>n .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                             | À.                                       |                   |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             |                                          |                   |                                       |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                             |                                          |                   |                                       |                        |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                             |                                          |                   | · · · · · · · · · · · · · · · · · · · |                        |

| By: JTB Date: 5/24/18<br>DMH/CB Data                                                                                                                                                                                                                                                        | Project No. <u>2</u><br>Municipality <u>Portsmouth, 1</u>                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Location: Coporate Drive, Sta $59 + 33 LT RT$                                                                                                                                                                                                                                               | ID No. CBDMH # 3004 3005                                                                            |
| Diameter: 4 ft. Material: B.Block Clear Opening:                                                                                                                                                                                                                                            | $\underline{\lambda} \underline{H}$ in. $\underline{CI}$ Metal Frame height: $\underline{8}$ in.    |
| in. Cone in. Slab Top Corbel height:                                                                                                                                                                                                                                                        | _ in Brick Concrete                                                                                 |
| Notes:                                                                                                                                                                                                                                                                                      |                                                                                                     |
| B. Rim to Sump Depth: <u>4.3</u> ft.<br>Rim to H <sub>2</sub> O Depth: <u>4.3</u> ft.<br>Rim to H <sub>2</sub> O Depth: <u>4.3</u> ft.<br>A.<br>Rim to A.<br>Rim to Inv. Depth<br>1. <u>4.8</u> ft.<br>2. <u>4.9</u> ft.<br>3ft.<br>4ft.<br>5ft.<br>A.<br>Rim to Sump Depth: <u>6.3</u> ft. | Clock Size/ Flow<br>Position Material Depth<br>$-6  13'' RCP \qquad 2-3''11  13'' RCP \qquad 7_2''$ |
| Photo(s):                                                                                                                                                                                                                                                                                   |                                                                                                     |
|                                                                                                                                                                                                                                                                                             |                                                                                                     |



| By: JTB Date: 5/24118                           |                                                                                                                                               |                                              |                                                                   |                                                                           | 0104                     |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------|
| N.                                              |                                                                                                                                               |                                              | Munic                                                             | Project Nc<br>ipality <u>Portsmou</u>                                     | ). <u>2184</u><br>th, NH |
|                                                 | DMH/CB Data                                                                                                                                   | Form                                         | $\sim$                                                            |                                                                           | N.C.Z                    |
| Location: Coporate Drive, Sta $61 + 33$         | LT(RT)                                                                                                                                        | ID                                           | No. <i>CB/DMH</i> #                                               | 2952                                                                      | 16.2                     |
| Diameter: <u>4</u> ft. Material: <u>B.BOCK</u>  | Clear Opening:                                                                                                                                | 24 in. (                                     | Metal Fram                                                        | e height: <u>8</u>                                                        | in.                      |
| in. Cone <u>8</u> in. Slab Top Corbel           | height:                                                                                                                                       | _inBric                                      | k Concret                                                         | 9                                                                         |                          |
| Notes:                                          |                                                                                                                                               |                                              |                                                                   |                                                                           |                          |
| B.                                              | A.         Rim to         Inv. Depth         1. $4.0$ ft.         2. $3.8$ ft.         3.       ft.         4.       ft.         5.       ft. | Clock<br>Position<br>6<br><br><br><br><br>2. | Size/<br>Material<br>12 <sup>°°</sup> ECP<br>12 <sup>°°</sup> ECP | Flow<br>Depth<br><del> 2</del> <u>4</u> "<br><del> 2</del> 2 <sup>∞</sup> |                          |
| Rim to HaO Dopth: 3.5 ft                        |                                                                                                                                               | 1.                                           |                                                                   |                                                                           |                          |
| Rim to H <sub>2</sub> O Deptn: ft.<br>Photo(s): |                                                                                                                                               |                                              |                                                                   |                                                                           |                          |
|                                                 |                                                                                                                                               |                                              |                                                                   |                                                                           |                          |

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| By: JTB Date: 6/6/18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                              |                     |                              | Project No. 2194      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------|------------------------------|-----------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DMH/CB Data                                                                  | <u>a Form</u>       | Municip                      | pality Portsmouth, NH |
| Location: Coporate Drive, Sta $66 + 82$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | LTRT                                                                         | ID                  | No. CBDMH #_                 | 3551\028              |
| Diameter: 4 ft. Material: B, BLOCK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Clear Opening:                                                               |                     | Metal Frame                  | height: <u>8</u> in.  |
| in. Conein. <a href="https://www.corbel">Southernormalized in. Corbel</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | height:                                                                      | _ in Bri            | ck Concrete                  |                       |
| Notes: PIPE@ 11 ? NOT VIS:<br>INLET LOWER THAN OUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | IBLE<br>TLET ?                                                               |                     |                              |                       |
| FRAME $A = B$ Cone       Cone         Cone | A.<br>Rim to<br>Inv. Depth<br>1. 2.3 ft.<br>2 ft.<br>3 ft.<br>4 ft.<br>5 ft. | = Clock Position _6 | Size/<br>Material<br>6-8°PVC | Flow<br>Depth         |
| Photo(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                     |                              |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                              |                     |                              |                       |

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| By: JTB Date: 616/18                           |                                                                                                  |
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|                                                | Project No. <u>2184</u><br>Municipality <u>Portsmouth, NH</u>                                    |
|                                                | DMH/CB Data Form                                                                                 |
| Location: Coporate Drive, Sta $66 + 83$        | (LT/RT ID No. CB/DMH # 35511064                                                                  |
| Diameter: <u>4</u> ft. Material: <u>FC</u>     | Clear Opening: <u>24</u> in. <i>Cl/Metal</i> Frame height: $\underline{\mathscr{B}}$ in.         |
| in. Conein. Slab Top Corbe                     | el height: <u>2</u> in. <u>2</u> Brick Concrete BRICK                                            |
| Notes: PIPE CLUGGED?<br>COMPLETELY UNDER Had O | IN BOTH ENDS                                                                                     |
| FRAME A B<br>CORBEL<br>Slab Top                | A. =<br>Rim to Clock Size/ Flow<br>Inv. Depth Position Material Depth<br>1. $3.6$ ft6_ 12-26 RLP |
|                                                | 2ft                                                                                              |
|                                                | 3ft                                                                                              |
|                                                | 4ft                                                                                              |
|                                                | 5ft                                                                                              |
| B.<br>Rim to Sump(Debris)Depth: $5.0$ ft.      |                                                                                                  |
| Rim to H <sub>2</sub> O Depth: $2.5$ ft.       |                                                                                                  |
| Photo(s):                                      |                                                                                                  |
|                                                |                                                                                                  |
|                                                |                                                                                                  |
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| · · · ·                                                                                                         | By: JTB Date: 5/31/18<br>Project No. 2184<br>Municipality Portsmouth, NH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|                                                                                                                 | $\frac{DMH/CB \text{ Data Form}}{DMH/CB \text{ Data Form}}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                 | Location: Coporate Drive, Sta $\underline{O} + \underline{I} $ |
|                                                                                                                 | in. Cone 8 in (Slab Top) Corbel height: in. Brick Concrete 2 BRICK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                 | Notes:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| от странование и полнование полнование полнование полнование полнование полнование полнование полнование полнов | $\mathbf{B}.$ Rim to Sump/Debris Depth: $\underline{6,5}$ ft.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                 | Rim to H <sub>2</sub> O Depth: $2.8$ ft. 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 10 10 10 10 10 10 10 10 10 10 10 10 10 1                                                                        | Photo(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| By: JTB Date: 5/31/18<br>Project No. 2184                                                                               |
|-------------------------------------------------------------------------------------------------------------------------|
| DMH/CB Data Form Municipality Portsmouth, NH                                                                            |
| <br>Location: Coporate Drive, Sta $69 + 53 LT/RT$ ID No. CB/DMH # 35511039                                              |
| Diameter: <u>4</u> ft. Material: <u><math>RL</math></u> Clear Opening: <u>24</u> in $OMetal$ Frame height: <u>8</u> in. |
| <u>4</u> in. Cone in. Slab Top Corbel height: in Brick Concrete                                                         |
| Notes: DEBPIS IN PIPE                                                                                                   |
| B.                                                                                                                      |
| <br>Rim to Sump Debris Depth: 5.75 ft.                                                                                  |
| Rim to H <sub>2</sub> O Depth: $3.4$ ft. $1.1$                                                                          |
| <br>Photo(s):                                                                                                           |
|                                                                                                                         |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Project No. <u>2184</u><br>Municipality <u>Portsmouth, NH</u><br><u>DMH/CB Data Form</u>                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ocation: Coporate Drive, Sta $76 + 46 LT(RT)$ ID No. CB/DMH # 2387                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | iameter: <u>4</u> ft. Material: <b>B.BUCK</b> Clear Opening: <u>24</u> in. <u>CDMetal</u> Frame height: <u>8</u> in.                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | in. Cone in. Slab Top Corbel height: in Brick Concrete                                                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | otes:                                                                                                                                                                                |
| And a constraint of the constr | FRAME       A.         Rim to       Clock       Size/       Flow         Inv. Depth       Position       Material       Depth         Shib Top $1. ~ 4/.2$ ft. $6$ $12$ ° R $C \rho$ |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | B.                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rim to $Sump(Debris)$ Depth: $\frac{5 \cdot 1}{1}$ ft.                                                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rim to H <sub>2</sub> O Depth: $\underline{OO}$ ft.                                                                                                                                  |
| a and a second and a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                      |

| By: <u>JTB</u> Date: <u>5/30/18</u>                                                                | DMU/CP Data Form                                                                                                                                 | Municir                                            | Project No. <u>2184</u><br>pality <u>Portsmouth, NH</u> |
|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|
| Location: Conorate Drive Sta 77 + 85                                                               | <u>DMH/CB Data Form</u>                                                                                                                          | ID No CHOMH#                                       | 2318                                                    |
| Diameter: <u>4</u> ft. Material: <u>KC</u><br>inConein. Slab Top Corbe                             | Clear Opening: 22<br>l height: <u>6</u> in                                                                                                       | in <i>CDMetal</i> Frame<br>Brick <u>6</u> Concrete | height: $6$ in.<br>1-6 RC RISER                         |
| Notes:                                                                                             |                                                                                                                                                  |                                                    | <u></u>                                                 |
| B.<br>Rim to Sump Debris Depth: $7.5$ ft.<br>Rim to H <sub>2</sub> O Depth: $5.9$ ft.<br>Photo(s): | A.       Rim to       Clock         Inv. Depth       Position         1. $6.9$ ft.       _6_         2. $6.8$ ft.       10         3.       _ft. | n Material<br>24 $RCP24$ $RCP24$ $RCP1$            | Flow<br>Depth<br>12 <sup>°°</sup>                       |
|                                                                                                    |                                                                                                                                                  |                                                    |                                                         |

| By: JTB Date: 618118                                                                       | Project No. <u>2184</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DMH/CB D                                                                                   | Municipality <u>Portsmouth, NH</u><br>Data Form                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Location: Coporate Drive, Sta 78 + 00 LT/RT                                                | ID No $\overrightarrow{CB}$ DMH # 2422                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Diameter: <u>4</u> ft. Material: B. BLOCK Clear Openin                                     | $g: \underline{24}$ in $\widehat{CDMetal}$ Frame height: $\underline{8}$ in.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| in. Cone in. Slab Top Corbel height:                                                       | in Brick Concrete                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Notes:                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| FRAME     A     Rim to       Core     I. 3.1 ft.       2. 3.1 ft.       3. 3.1 ft.       4 | Clock Size/ Flow<br>Position Material Depth<br>$ \begin{array}{c} 6 \\ 2 \\ 2 \\ 3 \\ 6 \\ 7 \\ 2 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 7 \\ 12 \\ 12 \\ 7 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12$ |
| Rim to Sump Debris Depth: $3.0$ ft.                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Rim to H <sub>2</sub> O Depth: $2.9$ ft.                                                   | $1. \downarrow [.] \qquad \sqrt{2} \sqrt{2} \sqrt{2} \sqrt{2} \sqrt{2} \sqrt{2} \sqrt{2} \sqrt{2}$                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Photo(s):                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| By: JTB Date: 5/30/18                       |                                                                                 |                            | Munici                                   | Project No. <u>21</u>               | <u>84</u><br>JH |
|---------------------------------------------|---------------------------------------------------------------------------------|----------------------------|------------------------------------------|-------------------------------------|-----------------|
| . j                                         | DMH/CB Dat                                                                      | a Form                     | Withhor                                  | panty <u>i orisinoun, i</u>         | 411             |
| Location: Coporate Drive, Sta $78 + 04$ (   | LTRT                                                                            | ID                         | No. <i>CBDMH</i> <b>∦</b>                | 2319                                | Ĵ               |
| Diameter: <u>4</u> ft. Material: <u>RC</u>  | Clear Opening:                                                                  | in(                        | CIMetal Fram                             | e height: <u>6</u> in.              |                 |
| in. Cone in. Slab Top Corbel                | height: 14                                                                      | in                         | ck <u>12</u> Concrete                    | 2-6"RCRISER                         | રડ              |
| Notes:                                      |                                                                                 |                            |                                          |                                     |                 |
| B.                                          | A.<br>Rim to<br>Inv. Depth<br>1. 7.15 ft.<br>2. 7.1 ft.<br>3ft.<br>4ft.<br>5ft. | Clock<br>Position<br>6<br> | Size/<br>Material<br>24 <sup>°</sup> PCP | Flow<br>Depth<br>10-12 <sup>1</sup> |                 |
| Rim to Sump Debris Depth:ft.                |                                                                                 | ۰<br>۲                     |                                          |                                     |                 |
| Rim to H <sub>2</sub> O Depth: $2^{12}$ ft. |                                                                                 | 1.                         |                                          |                                     |                 |
| Photo(s):                                   |                                                                                 |                            |                                          |                                     |                 |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | •                                                 | DMH/CB Date                                                                                                 | Form                  | Muni              | Project No. <u>218</u><br>cipality <u>Portsmouth, N</u> | <u>}4</u><br><u>H</u> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                   |                                                                                                             |                       |                   |                                                         | 、                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Location: Coporate Drive, Sta $18 + 00$           |                                                                                                             | ID                    | No. CB/DMH        | # 20 20 (6018)                                          | 1                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Diameter: <u>4</u> ft. Material: <u><u>R</u>C</u> | Clear Opening:                                                                                              | 19in.(C               | CI)Metal Fra      | me height: $\underline{\mathcal{A}}$ in.                | -                     |
| 1 :<br>5 :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | in. Cone <u>6</u> in. Clab Top Corbe              | height: <u>14</u>                                                                                           | _in. 2 Bric           | k / 2 Concre      | 2-6 RC RISERS                                           | •                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Notes: PIPEUSUALLY AT Hao LEI                     | VEL UNDER                                                                                                   | HOOD                  |                   |                                                         |                       |
| The second | FRAME A B<br>CORBEL<br>Slab Top<br>Cone           | A.         Rim to         Inv. Depth         1. 3.5 ft.         2ft.         3ft.         4ft.         5ft. | Clock<br>Position<br> | Size/<br>Material | Flow<br>Depth<br>W Here P                               |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | B.′                                               |                                                                                                             |                       |                   |                                                         |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Rim to Sump Debris Depth: <u>4.6</u> ft.          |                                                                                                             |                       |                   |                                                         |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Rim to H <sub>2</sub> O Depth: <u>3,5</u> ft.     |                                                                                                             | 1.                    |                   |                                                         |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Photo(s):                                         |                                                                                                             |                       |                   |                                                         |                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                   |                                                                                                             |                       |                   |                                                         |                       |

North States of the States of

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|                          | By: JTB Date: 6/8/18                            |                                                                                   |                                           |                                                                             | Project No. 2184             |
|--------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------|------------------------------|
| STORE STORE              |                                                 | DMH/CB Da                                                                         | ıta Form                                  | Munici                                                                      | pality <u>Portsmouth, NH</u> |
|                          | Location: Coporate Drive, Sta $78 + 53$ (       |                                                                                   | ID                                        | No. CB/DMH #_                                                               | 2348(6063)                   |
| A View of the local data | Diameter: $\square$ ft. Material: $\mathbb{RC}$ | Clear Opening                                                                     | s: 24 in.(                                | CIMetal Frame                                                               | e height: <u>8</u> in.       |
|                          | in. Cone in. Slab Top Corbel                    | height:                                                                           | inBri                                     | ck Concrete                                                                 | ;                            |
|                          | Notes:                                          |                                                                                   |                                           |                                                                             |                              |
|                          |                                                 | A.<br>Rim to<br>Inv. Depth<br>1. 3.0 ft.<br>2. 2.3 ft.<br>3 ft.<br>4 ft.<br>5 ft. | Clock<br>Position<br>6<br>0<br><br><br>2. | Size/<br>Material<br>12 <sup>°°</sup> RCP<br>12 <sup>°°</sup> C <b>X</b> FE | Flow<br>Depth                |
|                          | Rim to Sump Debris Depth: $2.75$ ft.            |                                                                                   |                                           | /                                                                           |                              |
| -                        | Rim to H <sub>2</sub> O Depth: ft.              |                                                                                   | 1.                                        |                                                                             |                              |
| 1                        | Photo(s):                                       |                                                                                   |                                           |                                                                             |                              |
|                          |                                                 |                                                                                   |                                           |                                                                             |                              |



| By: <u>JT6</u> Date: <u>618/18</u>                                                                                                        |                                                                                                                  | Municipa                                                                     | Project No. <u>2184</u><br>ality <u>Portsmouth, NH</u>       |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------|
| Location: Coporate Drive, Sta $80 + 26$ $TTRT$<br>Diameter: $4$ ft. Material: $6.642$ Clear C<br>in. Cone $4$ in. Slab Top Corbel height: | <u>/CB Data Form</u><br>Dpening: <u>24</u> in<br><u>2</u> in. <u></u> 1                                          | ID No. <i>CB/DMH</i> #<br>n <i>CI/Metal</i> Frame<br>Brick <u>2</u> Concrete | 2.500<br>height: <u>8</u> in.<br>1-2 <sup>°°</sup> RC P-ISER |
| Notes:                                                                                                                                    | to Clock<br>Depth Position<br>$\frac{4}{9}$ ft. <u>6</u><br>35  ft. <u>8</u><br>3 ft. <u>12</u><br>ft<br>ft<br>4 | Size/<br>Material<br>12``RCP<br>6` MET<br>12``RCP                            | Flow<br>Depth                                                |
| Rim to H <sub>2</sub> O Depth: $3.1$ ft.                                                                                                  |                                                                                                                  | 1.                                                                           |                                                              |
| Photo(s):                                                                                                                                 |                                                                                                                  |                                                                              |                                                              |

| By: <u>JTB</u> Date: $6/8/18$<br>Location: Coporate Drive, Sta $80 + 27$<br>Diameter: <u>4</u> ft. Material: <u>8</u> , <u>8</u> LOCK<br>in. Cone in. Slab Top Corbel<br>Notes: | DMH/CB Da<br>LT/RT<br>Clear Opening<br>I height:                                 | t <u>a Form</u><br>ID<br>: <u>24</u> in ((<br> | Munici<br>No <i>CBJDMH</i> #<br>CDMetal Fram<br>ck Concrete | Project No. <u>2184</u><br>ipality <u>Portsmouth, NH</u><br><u>2496</u><br>he height: <u>8</u> in.<br>2-LAYER BRICK |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| B.                                                                                                                                                                              | A.<br>Rim to<br>Inv. Depth<br>1. 2.9 ft.<br>2. ft.<br>3. ft.<br>4. ft.<br>5. ft. | Clock<br>Position<br>6                         | Size/<br>Material<br>12 <sup>°°</sup> PCP                   | Flow<br>Depth                                                                                                       |
| Rim to Sump/Debrie Depth: $2+7$ ft.                                                                                                                                             |                                                                                  | 1                                              |                                                             |                                                                                                                     |
| Rim to $H_2 \cup Depth: \underline{ } T$ .                                                                                                                                      |                                                                                  | 1.                                             | • []                                                        |                                                                                                                     |
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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  | DMH/CB Data                                                                             | <u>Form</u>                                       | Nunicipa                                                                                             | ality <u>Portsmouth, NH</u> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Location: Coporate Drive, Sta 82 + 44            | T)RT                                                                                    | ID                                                | No CBDMH #                                                                                           | 2165                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Diameter: 4 ft. Material: 6.BUCK C               | Clear Opening:                                                                          | 24_in.@                                           | <i>Metal</i> Frame                                                                                   | height: <u>8</u> in.        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | in. Cone in. Slab Top Corbel he                  | eight:                                                                                  | inBric                                            | k Concrete                                                                                           |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Notes:                                           |                                                                                         |                                                   |                                                                                                      |                             |
| а                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | B.                                               | A.<br>Rim to<br>Inv. Depth<br>1.2.85 ft.<br>2.3.15 ft.<br>3.2.8 ft.<br>4. ft.<br>5. ft. | Clock<br>Position<br>6 /2<br><br><br><br><br><br> | Size/<br>Material<br>15 <sup>°</sup> RCP<br>6 <sup>°°</sup> <sup>2</sup> MET<br>18 <sup>°°</sup> RCP | Flow<br>Depth               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Rim to Sum /Debris Depth: $\frac{2.9}{1000}$ ft. |                                                                                         | 2.                                                |                                                                                                      |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Rim to H <sub>2</sub> O Depth: $2.8$ ft.         |                                                                                         | 1.                                                | , .                                                                                                  |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Photo(s):                                        |                                                                                         | - 1.4034 - 19 <b>43.</b> - 15 <b>4</b> - 1494     | B.V. 1011                                                                                            |                             |
| and the second spectrum and the second |                                                  |                                                                                         |                                                   |                                                                                                      |                             |

| · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | By: <u>JTB</u> Date: <u>6/8/18</u><br>Project No. <u>2184</u><br>Municipality <u>Portsmouth, NH</u>                    |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| i<br>i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DMH/CB Data Form                                                                                                       |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Location: Coporate Drive, Sta $82 + 44$ LT(RT) ID No CB/DMH # 2166                                                     |  |  |  |  |  |  |
| <b>New 2010</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Diameter: <u>4</u> ft. Material: <u>B.BLOUK</u> Clear Opening: <u>24</u> in. <u>CIMetal</u> Frame height: <u>8</u> in. |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | in. Conein. Slab Top Corbel height:inBrickConcrete                                                                     |  |  |  |  |  |  |
| Notes: ENTIRE STRUCTURE MADE FROM BRICK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                        |  |  |  |  |  |  |
| Water state         Second state </th <th>B.</th> | B.                                                                                                                     |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Rim to Sump/Debris Depth: 2.2 ft.                                                                                      |  |  |  |  |  |  |
| -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Rim to H <sub>2</sub> O Depth: ft. $1 \downarrow \downarrow$                                                           |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Photo(s):                                                                                                              |  |  |  |  |  |  |
| art — trans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                        |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                        |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                        |  |  |  |  |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                        |  |  |  |  |  |  |

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Project No. <u>2184</u> Municipality Portsmouth, NH

|           | (                          |           | DMH/     | <u>CB INSPE</u> | CTION              | <u>REPORT</u>     |                   |                                    |                    |
|-----------|----------------------------|-----------|----------|-----------------|--------------------|-------------------|-------------------|------------------------------------|--------------------|
| Location: | <u>Corpor</u>              | ate Drive | STA 844  | 1derwood        | D No.              | CB/DMH            | #_2169            |                                    |                    |
| Dia       | _Ft.                       | Material: |          | Ву:             |                    | Date: 2           | $\frac{10}{22}$   | Åree                               |                    |
| Clear Ope | ning:                      | In.       | Frame:   | In.             | Corb               | el                | In. :             | Ac.                                |                    |
| Notes:    |                            | -         |          |                 |                    |                   |                   |                                    |                    |
| Ema       |                            |           | Frame    | Rim<br>Inv. 1   | to<br>Depth        | Clock<br>Position | Size/<br>Material | Cro.un<br><del>Flow</del><br>Depth | Inver<br>Depth     |
| (4        |                            |           | Corbel   | 1.              | <u>'</u> ''Ft.     | 6                 |                   |                                    | 3,75               |
|           |                            |           | Ft.      | 2 \             | <u>&amp; ~</u> Ft. | 9                 |                   | 2.05                               | 255                |
|           | n, y 1901 a ar 1, 1905 i 1 |           | )<br>    | ···· 3          | <u>\24</u> Ft.     |                   |                   |                                    | n m - Real J Start |
|           |                            |           | <u>♥</u> | 4               | Ft.                |                   |                   | . · ·                              |                    |
|           | $\cap$                     |           |          | 5               | Ft.                |                   | -                 |                                    |                    |
|           |                            |           | Ft.      |                 |                    | and a             |                   |                                    |                    |
| L         |                            |           | • Dump   |                 |                    | 1.                | Co                | nnects to:                         |                    |

| Observations      | Material | Condition<br>Rating | Notes |
|-------------------|----------|---------------------|-------|
| Frame/Cover:      |          |                     |       |
| Corbel:           |          | · ·                 |       |
| Cone/Slab Top     | ·-       |                     |       |
| Walls             |          |                     | -     |
| Invert/Shelf/Sump |          |                     |       |

Condition Rating Codes:

- 1. Good condition no further action needed
- 2. Minor defects no immediate action needed.
- 3. Defective or structurally obsolete will need attention or rehabilitation at some point in future.
- 4, Significant defects corrective action should be scheduled in near future.
- 5. Manhole or connecting pipes in extremely poor condition failure eminent needs immediate action.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | By: JTB Date: 6/8/19                            |                                                                                                                                           |                        |                                             | Project              | No 2184  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                 | DMH/CB Data                                                                                                                               | n Form                 | Munici                                      | pality <u>Portsm</u> | outh, NH |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Location: Coporate Drive, Sta $85 + 00$         |                                                                                                                                           | IĽ                     | $O \operatorname{No}(CB/DMH \#)$            | 2171                 |          |
| - This                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u> | Clear Opening:                                                                                                                            | 24in.(                 | <i>CIMetal</i> Fram                         | e height:            | in.      |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | in. Cone in. Slab Top Corbe                     | l height:                                                                                                                                 | _inBri                 | ick Concrete                                | •                    |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Notes: (OVER WOULD NOT COMP                     | euff                                                                                                                                      |                        |                                             |                      |          |
| and a second and a second a second a second a second as a | FRAME A B<br>CORBEL<br>Slab Top<br>Cone         | A.       Rim to         Inv. Depth $1.\sqrt{3.2}$ ft.         2.       ft.         3.       ft.         4.       ft.         5.       ft. | Clock<br>Position<br>6 | Size/<br>Material<br>12-15 <sup>°</sup> PCP | Flow<br>Depth        |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | B.                                              |                                                                                                                                           |                        |                                             |                      |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Rim to <i>Sump/Debris</i> Depth: 2.9 ft.        |                                                                                                                                           | N,                     |                                             |                      |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Rim to H <sub>2</sub> O Depth: ft.              |                                                                                                                                           | 1.                     | ↓ 1                                         |                      |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Photo(s):                                       |                                                                                                                                           |                        | k                                           |                      |          |

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|                                                                                                                 | By: JTB Date: 6/8/18                            |                                                |                        |                            | Project No. <u>2184</u>               |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------|------------------------|----------------------------|---------------------------------------|
|                                                                                                                 |                                                 | DMH/CB Data                                    | a Form                 | Municij                    | pality <u>Portsmouth, NH</u>          |
|                                                                                                                 | Location: Coporate Drive, Sta 87 + 81           |                                                | ID                     | No. CBDMH #_               | 1865                                  |
| a a a a a a a a a a a a a a a a a a a                                                                           | Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u> | Clear Opening:                                 | 24in.(                 | Metal Frame                | e height: $8$ in.                     |
|                                                                                                                 | in. Cone in. Slab Top Corbe                     | l height: <u>8</u>                             | _inBric                | ck 8 Concrete              | 1-8 Obuch                             |
|                                                                                                                 | Notes:                                          | ·····                                          |                        |                            |                                       |
| And                                                                         | FRAME A B<br>CORBEL                             | A.<br>Rim to<br>Inv. Depth<br>1. 5.2 ft.       | Clock<br>Position<br>6 | Size/<br>Material          | Flow<br>Depth                         |
| n a anna anna anna anna anna anna anna                                                                          | Cone                                            | 2. <u>4,2</u> ft.<br>3. <u>3.6</u> ft.<br>4ft. | 10                     | 6 MET?<br>6 MET?<br>6 AET? | · · · · · · · · · · · · · · · · · · · |
|                                                                                                                 | B.                                              | 5ft.                                           | 2.                     | 3,                         |                                       |
| 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 | Rim to <i>Sump/Debrig</i> Depth: <u>4,6</u> ft. |                                                |                        | /                          |                                       |
|                                                                                                                 | Rim to H <sub>2</sub> O Depth: ft.              |                                                | 1.                     |                            |                                       |
|                                                                                                                 | Photo(s):                                       |                                                |                        |                            |                                       |
| Annound Anno Anno Anno Anno Anno Anno Anno An                                                                   |                                                 |                                                |                        |                            |                                       |

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| By: $\_JTB$ Date: $\frac{6/8/18}{1}$<br>Location: Coporate Drive, Sta $\underline{87 + 82}$<br>Diameter: $\underline{4}$ ft. Material: $\underline{6.640}$ K<br>in. Cone in. Slab Top Corbel<br>Notes: | <u>DMH/CB Data</u><br><i>LT)RT</i><br>Clear Opening: _<br>height:              | <u>Form</u><br>ID<br><u>24</u> in. C<br>in Bric | Municip<br>No. <i>CBDMH</i> #<br><i>CI/Metal</i> Frame<br>ek Concrete | Project No. <u>2184</u><br>ality <u>Portsmouth, NH</u><br><u>1864</u><br>height: <u>8</u> in. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| $B. Rim to H_2O Depth:ft.$                                                                                                                                                                             | A.<br>Rim to<br>Inv. Depth<br>1. 5.4 ft.<br>2. 5.3 ft.<br>3ft.<br>4ft.<br>5ft. | Clock<br>Position<br>                           | Size/<br>Material<br>12 X PCP?<br>12 X PCP?                           | Flow<br>Depth                                                                                 |
|                                                                                                                                                                                                        |                                                                                |                                                 |                                                                       |                                                                                               |



|                                         | By: <u>JTB</u> Date: <u>61118</u><br>Project No. <u>2184</u>                                                               |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|                                         | Municipality Portsmouth, NH       DMH/CB Data Form                                                                         |
|                                         | Location: Coporate Drive, Sta $\frac{93}{+} \frac{57}{LT}RT$ ID No. CR/DMH # 1763                                          |
|                                         | Diameter: <u>4</u> ft. Material: <u>6.6LUK</u> Clear Opening: <u>30</u> in <u>CI</u> Metal Frame height: <u>6</u> in.      |
| 1) :<br>() :                            | in Cone in. Slab Top Corbel height: <u>30</u> in. <u>30</u> Brick Concrete                                                 |
|                                         | Notes:                                                                                                                     |
|                                         | B. $A.$ $Rim to Clock Size/ Flow Depth$ $I. 7.2.5 ft6 I5 F4.49$ $2. 6.15 ft9 I2 F4.9$ $3. 7.0 ft12 I2 F4.9$ $5ft3 I2 F4.9$ |
|                                         | Rim to Sump/Debris Depth: $7.1$ ft.                                                                                        |
|                                         | Rim to H <sub>2</sub> O Depth:ft. 1.                                                                                       |
|                                         | Photo(s):                                                                                                                  |
| AND |                                                                                                                            |

N. C.I.

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| Andrew                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | By: JTB Date: 5/31118<br>Project No. 2184                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Location: Coporate Drive, Sta $\underline{96} + \underline{44} \underbrace{LT}RT$ ID No. $\underbrace{CBDMH \# 1564}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u> Clear Opening: <u>24</u> in. <i>CDMetal</i> Frame height: <u>8</u> in.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6 in Cone in. Slab Top Corbel height: in Brick Concrete                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 100000 (Commented of the commented of th | Notes: COVER WOULD NOT COME OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| A constrained and a constrained an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Image: Construct of the state of the sta |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rim to H <sub>2</sub> O Depth: $5.65$ ft. 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| The second s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Photo(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------|-----------------------------------------|----------------------|
| · · · · · · · · · · · · · · · · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                 | DMH/CB Data                                                                                                                                           | Form                       | Munici                                                                       | Project No.<br>pality <u>Portsmouth</u> | <u>2184</u><br>1, NH |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Location: Coporate Drive, Sta $99 + 40$         | LTIRT                                                                                                                                                 | ID                         | No.CB/DMH #_                                                                 | 1339                                    |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Diameter: <u>4</u> ft. Material: <u>B.BLOCK</u> | Clear Opening:                                                                                                                                        | 24in. (                    | <i>Metal</i> Frame                                                           | e height: <u>8</u> is                   | n.                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | in. Cone <u>8</u> in Slab Top Corbel            | height:                                                                                                                                               | _inBrio                    | ck Concrete                                                                  |                                         |                      |
| And a second second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Notes:                                          |                                                                                                                                                       |                            |                                                                              |                                         |                      |
| Characteristic         Constrained         Constrained <thconstrained< th=""></thconstrained<> | FRAME A B<br>CORBEL<br>Slab Top<br>Cone         | A.<br>Rim to<br>Inv. Depth<br>$1. \sim \frac{4.6}{1.0}$ ft.<br>$2. \sim \frac{4.4}{1.0}$ ft.<br>$3. \qquad ft.$<br>$4. \qquad ft.$<br>$5. \qquad ft.$ | Clock<br>Position<br>6<br> | Size/<br>Material<br>12 <sup>°°</sup> PCP<br>10 <sup>°°</sup> <del>MET</del> | Flow<br>Depth                           |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | B.<br>Bim to Sumplification Donths 4.5 4        |                                                                                                                                                       |                            | )                                                                            |                                         |                      |
| areas and a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Rim to $Sumplements Depth: It.$                 |                                                                                                                                                       | 1.                         |                                                                              |                                         |                      |
| 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Photo(s):                                       |                                                                                                                                                       | Y                          | y ( <sub>50.</sub> 1                                                         |                                         |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |                                                                                                                                                       |                            |                                                                              |                                         |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |                                                                                                                                                       |                            |                                                                              |                                         |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |                                                                                                                                                       |                            |                                                                              |                                         |                      |
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Statement

| By: JTB Date: 6/7/18                     |                                               |                   | Munic              | Project No. <u>218</u><br>pality <u>Portsmouth, N</u> |
|------------------------------------------|-----------------------------------------------|-------------------|--------------------|-------------------------------------------------------|
|                                          | DMH/CB Da                                     | <u>ta Form</u>    |                    |                                                       |
| Location: Coporate Drive, Sta $49 + 40$  | (LT)RT                                        | ID                | No. <i>CBDMH</i> # | 1340                                                  |
| Diameter: <u>4</u> ft. Material: B.BLOCK | Clear Opening                                 | : <u>24</u> in.(  | CDMetal Fram       | he height: $\underline{\mathscr{S}}_{}$ in.           |
| in. Cone <u>6</u> in. (Slab Top) Corbel  | height: 2                                     | _ in2`` Brie      | ck Concrete        | I LAYER<br>BRICK                                      |
| Notes:                                   |                                               |                   |                    |                                                       |
|                                          |                                               |                   |                    |                                                       |
| FRAME A B<br>CORBEL                      | A.<br>Rim to<br>Inv. Depth<br>$1 \sim 6.0$ ft | Clock<br>Position | Size/<br>Material  | Flow<br>Depth                                         |
| Cone                                     | 1 m                                           | 12                | 12-12-00           |                                                       |
|                                          | $2.5 - \frac{3}{2}$ it.                       | 12-               | 10 AKCP            |                                                       |
|                                          | 3ft.                                          | ·                 |                    |                                                       |
|                                          | 4 ft.                                         | ·                 |                    |                                                       |
|                                          | 5ft.                                          | ·                 |                    |                                                       |
|                                          |                                               |                   |                    |                                                       |
|                                          |                                               | 2                 | •                  |                                                       |
|                                          |                                               | 1                 |                    |                                                       |
|                                          |                                               |                   | )                  |                                                       |
| Rim to Sumpt Depth: ft.                  |                                               |                   |                    |                                                       |
| Rim to H <sub>2</sub> O Depth: ft.       |                                               | 1.                |                    |                                                       |
| Photo(s):                                |                                               |                   |                    |                                                       |
|                                          |                                               |                   |                    |                                                       |

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#### **APPENDIX D**

### **CCTVLOGS FOR EXISTING DRAINAGE SYSTEM**



# **CCTV Defects by Inspection**

| Organization: Vortex Services                   | City:   |           | Submission date: |                     |
|-------------------------------------------------|---------|-----------|------------------|---------------------|
| Project name: Corporate Dr Dewater Clean & CCTV | Status: | Completed | Submitted to:    | Underwood Engineers |

Comments:

| Inspections         |                  |                    |     |                    |               | Structural conditions O and M conditions |        |          |             |                  |                  |                |       |        | Misc                 |                  |              |             |                 |                  |                  |                   |
|---------------------|------------------|--------------------|-----|--------------------|---------------|------------------------------------------|--------|----------|-------------|------------------|------------------|----------------|-------|--------|----------------------|------------------|--------------|-------------|-----------------|------------------|------------------|-------------------|
| Date/time           | Upstream<br>node | Downstream<br>node | Dir | Length<br>surveyed | Break in pipe | Collapse                                 | Cracks | Fracture | Deformation | Defective Joints | Defective Lining | Defective Taps | Roots | Grease | Encrustation & Scale | Settled Deposits | Infiltration | Obstraction | Line Deviations | Water Level +20% | Survey Abandoned | Camera Underwater |
| 11/29/2021 11:03 AM | DMH-126          | HW-127             | D   | 182.7 ft.          |               |                                          |        |          |             |                  |                  |                | 19    |        |                      | 36               |              |             |                 |                  |                  |                   |
| 11/29/2021 11:13 AM | DMH-125          | DMH-126            | U   | 25.3 ft.           |               |                                          |        |          |             |                  |                  |                |       |        |                      | 5                |              |             |                 |                  |                  |                   |
| 11/29/2021 11:38 AM | DMH-124          | DMH-125            | U   | 109.6 ft.          |               |                                          |        |          |             |                  |                  |                |       |        |                      | 4                |              |             |                 |                  | 1                |                   |
| 11/30/2021 9:46 AM  | DMH-124          | DMH-125            | D   | 196.9 ft.          |               |                                          |        |          |             |                  |                  |                |       |        |                      | 1                |              |             |                 |                  |                  |                   |
| 11/30/2021 10:01 AM | DMH-123          | DMH-124            | U   | 125.8 ft.          |               |                                          |        |          |             |                  |                  |                |       |        |                      | 25               |              |             |                 |                  |                  |                   |
| 11/30/2021 1:58 PM  | CB-1             | CB-2               | U   | 52.5 ft.           |               |                                          |        |          |             |                  |                  |                |       |        |                      | 4                |              |             |                 |                  |                  |                   |
| 11/30/2021 2:46 PM  | CB-2             | DMH-160            | D   | 223.3 ft.          |               |                                          | 1      |          |             | 1                |                  |                | 1     |        |                      |                  |              |             |                 |                  |                  |                   |

CCTV Defects by Inspection

Page 1 of 2

|                    | Inspect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | tions              |     |                    |               | Stru     | ctura  | al co    | ndit        | ions             |                  | O and M conditions |       |        |                      |                  |              | Mi          | Misc            |                  |                  |                   |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|--------------------|---------------|----------|--------|----------|-------------|------------------|------------------|--------------------|-------|--------|----------------------|------------------|--------------|-------------|-----------------|------------------|------------------|-------------------|
| Date/time          | Upstream<br>node                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Downstream<br>node | Dir | Length<br>surveyed | Break in pipe | Collapse | Cracks | Fracture | Deformation | Defective Joints | Defective Lining | Defective Taps     | Roots | Grease | Encrustation & Scale | Settled Deposits | Infiltration | Obstraction | Line Deviations | Water Level +20% | Survey Abandoned | Camera Underwater |
| 11/30/2021 3:26 PM | DMH-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-12              | D   | 243.7 ft.          |               |          |        |          |             |                  |                  |                    |       |        | 6                    | 1                |              | 1           |                 |                  |                  |                   |
| 11/30/2021 3:44 PM | DMH-160                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DMH-7              | U   | 269.8 ft.          | 2             |          |        | 1        |             |                  |                  |                    | 2     |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/1/2021 9:13 AM  | DMH-72                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OF-72A             | D   | 79.6 ft.           | 1             |          |        |          |             |                  |                  |                    | 3     |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 10:24 AM | CB-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CB-3               | U   | 42.1 ft.           |               |          |        |          |             | 1                |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 10:48 AM | CB-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DMH-160            | D   | 10.0 ft.           |               |          |        |          |             | 1                |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 10:56 AM | СВ-9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CB-8               | U   | 29.6 ft.           |               |          |        |          |             |                  |                  |                    |       |        |                      | 2                |              |             |                 |                  |                  |                   |
| 12/2/2021 11:01 AM | CB-8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DMH-7              | D   | 10.0 ft.           |               |          |        |          |             |                  |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 11:52 AM | CB-10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-22              | D   | 117.5 ft.          |               |          | 2      | 1        |             |                  |                  |                    |       |        |                      | 1                |              |             |                 |                  |                  |                   |
| 12/2/2021 12:23 PM | CB-24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-12              | D   | 5.0 ft.            |               |          |        |          |             |                  |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 12:35 PM | CB-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-13              | D   | 204.9 ft.          |               |          |        |          |             |                  |                  |                    |       |        | 14                   | 1                |              |             |                 |                  |                  |                   |
| 12/2/2021 12:44 PM | CB-13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DMH-14             | D   | 120.2 ft.          |               |          |        |          |             |                  |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 2:06 PM  | CB-23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-24              | D   | 59.7 ft.           | 4             |          |        | 3        |             |                  |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 2:19 PM  | CB-22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-23              | U   | 61.5 ft.           |               |          | 2      |          |             |                  |                  |                    |       |        |                      | 2                |              |             |                 |                  |                  |                   |
| 12/2/2021 2:35 PM  | CB-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DMH-7              | D   | 13.3 ft.           |               |          |        |          |             |                  |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/2/2021 3:01 PM  | CB-19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-13              | U   | 2.1 ft.            |               |          |        |          |             |                  |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
| 12/3/2021 1:13 PM  | CB-5103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | CB-5102            | D   | 1.0 ft.            |               |          |        |          |             |                  |                  |                    |       |        |                      | 1                |              | 2           |                 |                  | 1                |                   |
| 12/9/2021 11:04 AM | CB-18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CB-19              | U   | 40.0 ft.           |               |          |        |          |             | 1                |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |
|                    | Totals         2,226.2 ft.         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N         N |                    |     |                    |               |          |        | 0        | 2           | 0                |                  |                    |       |        |                      |                  |              |             |                 |                  |                  |                   |



## **Main Inspections Summary**

### **Corporate Dr Dewater Clean & CCTV**

| Mainline ID             | End date/time            | Surveyed by  | Start MH | Finish MH | Material | Height | Total length | Length    |
|-------------------------|--------------------------|--------------|----------|-----------|----------|--------|--------------|-----------|
| DMH-<br>126_HW-127      | 11/29/2021<br>7 11:03 AM | Jon Latham   | DMH-126  | HW-127    | RCP      | 24 in. | 182.7 ft.    | 182.7 ft. |
| DMH-<br>125_DMH-<br>126 | 11/29/2021<br>11:13 AM   | Jon Latham   | DMH-126  | DMH-125   | RCP      | 24 in. | 25.3 ft.     | 25.3 ft.  |
| DMH-<br>124_DMH-<br>125 | 11/29/2021<br>11:38 AM   | Jon Latham   | DMH-125  | DMH-124   | RCP      | 24 in. | 196.9 ft.    | 109.6 ft. |
| DMH-<br>124_DMH-<br>125 | 11/30/2021 9:46<br>AM    | ) Jon Latham | DMH-124  | DMH-125   | RCP      | 24 in. | 196.9 ft.    | 196.9 ft. |
| DMH-<br>123_DMH-<br>124 | 11/30/2021<br>10:01 AM   | Jon Latham   | DMH-124  | DMH-123   | RCP      | 24 in. | 125.8 ft.    | 125.8 ft. |
| CB-1_CB-2               | 11/30/2021 1:58<br>PM    | 3 Jon Latham | CB-2     | CB-1      | RCP      | 15 in. | 52.5 ft.     | 52.5 ft.  |

Main Inspections Summary

Page 1 of 3

| Mainline ID       | End date/time         | Surveyed by | Start MH | Finish MH | Material | Height | Total length | Length    |
|-------------------|-----------------------|-------------|----------|-----------|----------|--------|--------------|-----------|
| CB-2_DMH-<br>160  | 11/30/2021 2:46<br>PM | Jon Latham  | CB-2     | DMH-160   | RCP      | 15 in. | 223.3 ft.    | 223.3 ft. |
| DMH-7_CB-<br>12   | 11/30/2021 3:26<br>PM | Jon Latham  | DMH-7    | CB-12     | RCP      | 15 in. | 243.7 ft.    | 243.7 ft. |
| DMH-<br>160_DMH-7 | 11/30/2021 3:44<br>PM | Jon Latham  | DMH-7    | DMH-160   | RCP      | 15 in. | 269.8 ft.    | 269.8 ft. |
| DMH-72_OF<br>-72A | 12/1/2021 9:13<br>AM  | Jon Latham  | DMH-72   | OF-72A    | RCP      | 30 in. | 79.6 ft.     | 79.6 ft.  |
| CB-4_CB-3         | 12/2/2021 10:24<br>AM | Jon Latham  | CB-3     | CB-4      | RCP      | 12 in. | 42.1 ft.     | 42.1 ft.  |
| CB-3_DMH-<br>160  | 12/2/2021 10:48<br>AM | Jon Latham  | CB-3     | DMH-160   | RCP      | 12 in. | 10.0 ft.     | 10.0 ft.  |
| CB-9_CB-8         | 12/2/2021 10:56<br>AM | Jon Latham  | CB-8     | СВ-9      | RCP      | 12 in. | 29.6 ft.     | 29.6 ft.  |
| CB-8_DMH-<br>7    | 12/2/2021 11:01<br>AM | Jon Latham  | CB-8     | DMH-7     | RCP      | 12 in. | 10.0 ft.     | 10.0 ft.  |
| CB-10_CB-<br>22   | 12/2/2021 11:52<br>AM | Jon Latham  | CB-10    | CB-22     | RCP      | 12 in. | 117.5 ft.    | 117.5 ft. |
| CB-24_CB-<br>12   | 12/2/2021 12:23<br>PM | Jon Latham  | CB-24    | CB-12     | RCP      | 12 in. | 5.0 ft.      | 5.0 ft.   |
| CB-12_CB-<br>13   | 12/2/2021 12:35<br>PM | Jon Latham  | CB-12    | CB-13     | RCP      | 15 in. | 204.9 ft.    | 204.9 ft. |

| Mainline ID             | End date/time         | Surveyed by  | Start MH | Finish MH | Material  | Height | Total length | Length      |
|-------------------------|-----------------------|--------------|----------|-----------|-----------|--------|--------------|-------------|
| CB-13_DMH<br>-14        | 12/2/2021 12:44<br>PM | Jon Latham   | CB-13    | DMH-14    | RCP       | 15 in. | 120.2 ft.    | 120.2 ft.   |
| CB-23_CB-<br>24         | 12/2/2021 2:06<br>PM  | Jon Latham   | CB-23    | CB-24     | RCP       | 12 in. | 59.7 ft.     | 59.7 ft.    |
| CB-22_CB-<br>23         | 12/2/2021 2:19<br>PM  | Jon Latham   | CB-23    | CB-22     | RCP       | 12 in. | 61.5 ft.     | 61.5 ft.    |
| CB-6_DMH-<br>7          | 12/2/2021 2:35<br>PM  | Jon Latham   | CB-6     | DMH-7     | RCP       | 12 in. | 13.3 ft.     | 13.3 ft.    |
| CB-19_CB-<br>13         | 12/2/2021 3:01<br>PM  | Jon Latham   | CB-13    | CB-19     | RCP       | 12 in. | 2.1 ft.      | 2.1 ft.     |
| CB-<br>5103_CB-<br>5102 | 12/3/2021 1:13<br>PM  | Jon Latham   | CB-5103  | CB-5102   | RCP       | 10 in. | 1.0 ft.      | 1.0 ft.     |
| CB-18_CB-<br>19         | 12/9/2021 11:04<br>AM | I Jon Latham | CB-19    | CB-18     | RCP       | 12 in. | 40.0 ft.     | 40.0 ft.    |
|                         |                       |              |          |           | Sub-Total |        | 2,313.5 ft.  | 2,226.2 ft. |
|                         |                       |              |          |           | Total     |        | 2,313.5 ft.  | 2,226.2 ft. |

Main Inspections Summary





| Proi      | iect | name: |  |
|-----------|------|-------|--|
| · · • • ] |      |       |  |

Mainline ID: DMH-124\_DMH-125

Corporate Dr Dewater Clean & CCTV

Weather: 1



|                                                       | Main Insp                   | ections Pipe R                           | un                                                  |            |
|-------------------------------------------------------|-----------------------------|------------------------------------------|-----------------------------------------------------|------------|
| Project name:<br>Corporate Dr Dewater<br>Clean & CCTV | Mainline ID:<br>CB-23_CB-24 | City:<br>Portsmouth NH                   | Street:<br>Redhook Way                              | _          |
| Start date/time:                                      | Direction:                  | Weather:                                 | Location code:                                      |            |
| 12/2/2021 1:50 PM                                     | D                           | 1                                        | С                                                   |            |
| Shape:<br>C                                           | Material:<br>RCP            | Height:<br>12 in.                        | Width:                                              |            |
| Started                                               | at 0.0 ft. with flow —      | ACB 'CB-23'                              | ) ft. 0.0                                           | ft.        |
| on 12/2                                               | /2021 1:50:26 PM 🔹          | ACB -<br>Comr                            | nents: CB-23                                        |            |
| 0.7 ft.<br>0.7 ft.                                    |                             | ↓ I At 0.0<br>MWL<br>Level               | ) ft.<br>- Miscellaneous Water<br>7.5               | <u>ft.</u> |
| 22 23                                                 |                             | 14 A A A A A A A A A A A A A A A A A A A |                                                     |            |
| ngth                                                  |                             |                                          | 15.0                                                | ft.        |
| line le<br>eyed le                                    |                             | ♦ 🙆 At 21                                | .9 ft. 4/9                                          |            |
| Surv                                                  |                             | Ratin                                    | g: 4                                                | ft.        |
|                                                       |                             | Categ                                    | ory: Structural                                     |            |
|                                                       |                             | B - B                                    | roken                                               |            |
| Omitted: 29.8 ft.                                     |                             | Ratin                                    | g: 4 29.9                                           | ft.        |
|                                                       |                             | ↓ (a) At 23                              | .4 ft. 12/4                                         |            |
|                                                       |                             | FC - I<br>Ratin                          | Fracture Circumferential<br>g: 2<br>unv: Structural |            |
|                                                       |                             | ↓ 🖸 At 29                                | .9 ft. 12/12                                        |            |
|                                                       |                             | B - B                                    | roken                                               |            |
|                                                       |                             | Categ                                    | gory: Structural                                    |            |
|                                                       |                             | 🕈 🙆 At 29                                | .9 ft. 8/11                                         |            |
|                                                       |                             | LISB -<br>Ratin<br>Cater                 | Infiltration Stain Barrel<br>g:                     |            |







| Main Inspections Pipe Run            |                 |               |                |  |  |  |
|--------------------------------------|-----------------|---------------|----------------|--|--|--|
| Project name:                        | Mainline ID:    | City:         | Street:        |  |  |  |
| Corporate Dr Dewater<br>Clean & CCTV | CB-5103_CB-5102 | Portsmouth NH | Corporate Dr   |  |  |  |
| Start date/time:                     | Direction:      | Weather:      | Location code: |  |  |  |
| 12/3/2021 10:02 AM                   | D               | 1             | В              |  |  |  |
| Shape:                               | Material:       | Height:       | Width:         |  |  |  |
| С                                    | RCP             | 10 in.        |                |  |  |  |
| Channed                              |                 |               |                |  |  |  |

Stopped at -9.0 ft. with flow on 12/3/2021 1:13:13 PM



| Project name:<br>Corporate Dr Dewater<br>Clean & CCTV<br>Weather: | Mainline ID:<br>CB-5103_CB-5102 | Start date/tin<br>12/3/2021 10 | ne:<br>:02 AM                                                                                                                                                                                                                                 | Direction:<br>D                                                                 |                                       |
|-------------------------------------------------------------------|---------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------|
| Mainline length: 1.0 ft.<br>Surveyed length: 1.0 ft.              | A                               | + @<br>MH 'CB-5102' + @<br>+ @ | At 1.0 ft. 7/.<br>OBB - Obstruction<br>Masonry<br>Rating: 2<br>Category: 0&M<br>At 1.0 ft. 4/8<br>OBR - Obstruction<br>Rating: 2<br>Category: 0&M<br>At 1.0 ft.<br>MSA - Miscellanee<br>Abandoned<br>Category: 0&M<br>Comments: Unab<br>rocks | n Brick or<br>n Rocks<br>ous Survey<br>le to navigate over<br>s, needs cleaning | <u>1.0 ft.</u><br>1.0 <del>ft</del> . |



|                     |                                                  | Main Inspe                                                                                                                                                          | ctions Pipe            | e Run                                                                                                           |           |
|---------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------|-----------|
| Projec<br>Corpo     | t name:<br>prate Dr Dewater                      | Mainline ID:<br>DMH-126_HW-127                                                                                                                                      | City:<br>Portsmouth NH | Street:<br>Corporate Dr XC                                                                                      |           |
| Start o             | late/time:                                       | Direction:                                                                                                                                                          | Weather                | Location code:                                                                                                  |           |
| 11/29/2021 10·34 ΔM |                                                  | D                                                                                                                                                                   | 1                      | G                                                                                                               |           |
| Shape               | :                                                | Material:                                                                                                                                                           | Height:                | Width:                                                                                                          |           |
| С                   | -                                                | RCP                                                                                                                                                                 | 24 in.                 |                                                                                                                 |           |
|                     |                                                  | АМ                                                                                                                                                                  | H 'DMH-126'            |                                                                                                                 |           |
|                     | Started at                                       | 0.0 ft. with flow 🔒 🕇                                                                                                                                               | O +0                   | At 0.0 ft.<br>AMH - Manhole                                                                                     | 0.0 ft.   |
|                     | on 11/29/                                        | 2021 10:34:58 AM ▼<br>At 0.0 ft. 5/7 🙆 ↓<br>sits Settled Fine<br>Rating: <mark>2</mark>                                                                             |                        | Comments: DMH-126<br>At 0.0 ft.<br>MWL - Miscellaneous Water                                                    |           |
| : 182.7 ft.         | S01: RFJ - I                                     | Category: O&M<br>At 33.5 ft. 8/4 IIII ↓<br>Roots Fine Joint<br>Rating: II<br>Category: O&M                                                                          | ~                      |                                                                                                                 | 45.7 ft.  |
| lainline length     | F01: RFJ - I                                     | At 123.6 ft. 8/4 🙆 🖌                                                                                                                                                |                        | At 105.0 ft. 11/1<br>SSS - Surface Damage Surface<br>Spalling<br>Rating: <mark>2</mark><br>Category: Structural | 91,4 ft.  |
| 2 0                 | Stopped at<br>on 11/29/20<br>S03: ISJ - Infiltra | Category: 08M<br>132.5 ft. with flow<br>221 11:03:15 AM<br>At 161.2 ft. 8/4 🗐 🕴 🛱                                                                                   | +0                     | At 156.2 ft. 11/1<br>RFJ - Roots Fine Joint<br>Rating: Category: O&M                                            |           |
|                     | F03: ISJ - Infiltra<br>F02: DSF - Depos          | Rating:<br>Category: O&M<br>At 170.3 ft. 8/4<br>At 170.3 ft. 8/4<br>Rating:<br>Category: O&M<br>At 182.0 ft. 5/7<br>sits Settled Fine<br>Rating: 2<br>Category: O&M | CB 'HW-127'            | At 182.7 ft.<br>ADP - Access Point Discharge<br>Point<br>Comments: HW-127                                       | 182.7 ft. |










|                        |                              | Main Insp                         | ections Pipe R         | lun                              |           |
|------------------------|------------------------------|-----------------------------------|------------------------|----------------------------------|-----------|
| Project na<br>Corporat | ame:<br>e Dr Dewater<br>CCTV | Mainline ID:<br>DMH-160_DMH-7     | City:<br>Portsmouth NH | Street:<br>Corporate Dr          |           |
| Start date             | e/time:                      | Direction:                        | Weather:               | Location code:                   |           |
| 11/30/202              | 21 3:27 PM                   | U                                 | 1                      | F                                |           |
| Shape'                 |                              | Material                          | Height:                | Width                            |           |
| C                      |                              | RCP                               | 15 in.                 | TTREET                           |           |
|                        |                              | А                                 | MH 'DMH-160'           |                                  |           |
|                        |                              |                                   | 0                      |                                  |           |
|                        | Stopped at 26                | 9.8 ft. against flow <del>ू</del> | At 20                  | 59.8 ft.                         | 0.0 ft.   |
| 1                      | on 11/30/202                 | 1 3:44:36 PM T                    | Com                    | ments: DMH-160                   |           |
|                        |                              |                                   | At 2                   | 56.9 ft. 8/4                     |           |
|                        |                              |                                   | B-E                    | Broken                           |           |
|                        |                              |                                   | Ratin                  | ng: 4                            |           |
|                        |                              |                                   | Cate                   | gory: Structural                 | 67.5 ft.  |
| 100 70                 |                              |                                   | ALZ                    | Pooto Fino Joint                 |           |
| 8 4                    |                              |                                   | Rati                   | a:                               |           |
| 6.6                    |                              |                                   | Cate                   | gory: O&M                        |           |
| 26                     |                              |                                   | At 1                   | 74.4 ft. 10/.                    |           |
| ë ë                    |                              |                                   | B-E                    | Broken                           |           |
| ngt                    |                              |                                   | Rati                   | ng: <mark>4</mark>               | 134.9 ft. |
|                        |                              |                                   | Cate                   | gory: Structural                 |           |
| ed led                 |                              |                                   | At 1                   | /4.4 π. 8/10<br>Roote Fine Joint |           |
| ve)                    |                              |                                   | Rati                   | a:                               |           |
| Vai                    |                              |                                   | Cate                   | gory: O&M                        |           |
| 2 01                   |                              |                                   | ▲ 🖸 At 1               | 72.5 ft. 12/1                    | 202.4 ft. |
|                        |                              |                                   | FM -                   | Fracture Multiple                |           |
|                        |                              |                                   | Rati                   | ng: 🐴                            |           |
|                        |                              |                                   | Cate                   | gory: Structural                 |           |
|                        |                              |                                   | 10.20                  | 1981                             |           |
| 1                      | Started at                   | 0.0 ft. against flow 👗            | ↑ 💿 At 0.              | 0 ft.                            |           |
|                        | on 11/30/2                   | 2021 3:27:46 PM 📫                 | AMH                    | - Manhole                        | 269.8 ft. |
|                        | 41 G21                       |                                   | Com                    | A A                              |           |
|                        |                              |                                   |                        | - Miscellaneous Water            |           |
|                        |                              | 1.00                              | ANU DAU 7              | - Inscendingous Water            |           |



|                                                          |                                                   | Main Insp                                                                         | ections Pipe           | e Run                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |
|----------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Project name:<br>Corporate Dr Dewater                    |                                                   | Mainline ID:<br>CB-2_DMH-160                                                      | City:<br>Portsmouth NH | Street:<br>Corporate Dr                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |
| Start date/tim                                           | ie:                                               | Direction:                                                                        | Weather:               | Location code:                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |
| 11/30/2021 1:                                            | :59 PM                                            | D                                                                                 | 1                      | В                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |
| Shape:                                                   |                                                   | Material:                                                                         | Height:                | Width:                                                                                                                                                                                                                                                                                                                                                                                    |                                                                       |
| С                                                        |                                                   | RCP                                                                               | 15 in.                 |                                                                                                                                                                                                                                                                                                                                                                                           |                                                                       |
| Mainline length: 223.3 ft.<br>Surveyed length: 223.3 ft. | Started at<br>on 11/30/<br>Stopped a<br>on 11/30/ | t 0.0 ft. with flow<br>/2021 1:59:53 PM<br>t 0.0 ft. with flow<br>2021 2:46:23 PM | ACB 'CB-2'             | At 0.0 ft.<br>ACB - Access Point Catch Basin<br>Comments: CB-2<br>At 0.0 ft.<br>MWL - Miscellaneous Water<br>Level<br>At 30.6 ft. 2/.<br>SMW - Surface Damage Missing<br>Wall<br>Rating:<br>Category: Structural<br>At 45.8 ft. 12/.<br>CL - Crack Longitudinal<br>Rating: 2<br>Category: Structural<br>At 47.0 ft. 12/12<br>ISJ - Infiltration Stain Joint<br>Rating: 1<br>Category: O&M | 0.0 ft.<br>25.0 ft.<br>50.0 ft.<br>75.0 ft.<br>100.0 ft.<br>124.9 ft. |
|                                                          |                                                   |                                                                                   | ×                      |                                                                                                                                                                                                                                                                                                                                                                                           | 149,9 ft.                                                             |
|                                                          |                                                   |                                                                                   | +@<br>                 | At 175.6 ft. 12/.<br>SMW - Surface Damage Missing<br>Wall<br>Rating:<br>Category: Structural<br>At 199.9 ft. 10/.                                                                                                                                                                                                                                                                         | 174.9 ft.                                                             |
| Omitte                                                   | ed: 23.4 ft.                                      |                                                                                   |                        | RFJ - Roots Fine Joint<br>Rating:<br>Category: O&M                                                                                                                                                                                                                                                                                                                                        | 199.9 ft.                                                             |

| Project name:                           | Mainline ID: | Start date/time: | Direction:                                                                                                                                                                                                                             |        |
|-----------------------------------------|--------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Corporate Dr Dewater<br>Clean & CCTV    | CB-2_DMH-160 | 11/30/2021 1:5   | PM D                                                                                                                                                                                                                                   |        |
| Weather:                                |              |                  |                                                                                                                                                                                                                                        |        |
| 1                                       |              |                  |                                                                                                                                                                                                                                        |        |
| 10, 223.3 ft.<br>223.3 ft.<br>223.3 ft. |              | +@               | At 199.9 ft. 10/.<br>SMW - Surface Damage Missing<br>Wall<br>Rating:                                                                                                                                                                   | .9 ft. |
| Mainline len<br>Surveyed len            |              | AMH 'DMH-160 + @ | At 207.9 ft. 8/.<br>SMW - Surface Damage Missing 223.<br>Wall<br>Rating:<br>Category: Structural<br>At 215.3 ft.<br>JOM - Joint Offset Medium<br>Rating:<br>Category: Structural<br>At 223.3 ft.<br>AMH - Manhole<br>Comments: DMH-160 | 3 ft.  |



















|                         |                       | Main Ins                                     | pections Pipe          | e Run                                                                                                  |          |
|-------------------------|-----------------------|----------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------|----------|
| Project na<br>Corporat  | ame:<br>te Dr Dewater | Mainline ID:<br>CB-10_CB-22                  | City:<br>Portsmouth NH | Street:<br>Corporate Dr                                                                                |          |
| Start date              | e/time:               | Direction:                                   | Weather:               | Location code:                                                                                         |          |
| 12/2/202<br>Shape:<br>C | 1 11:40 AM            | D<br>Material:<br>RCP                        | 1<br>Height:<br>12 in. | B<br>Width:                                                                                            |          |
|                         |                       |                                              | ACB 'CB-10'            | At 0.0 ft                                                                                              |          |
| Å                       | Started a<br>on 12/2/ | it 0.0 ft. with flow 🕁<br>2021 11:40:59 AM 🐨 | +0                     | ACB - Access Point Catch Basin<br>Comments: CB-10<br>At 0.0 ft.<br>MWL - Miscellaneous Water<br>Level  | 0,0 ft.  |
| 7.5 ft.<br>7.5 ft.      |                       |                                              | +0                     | At 14.0 ft. 5/7<br>DSC - Deposits Settled Hard/<br>Compacted<br>Rating: 2<br>Category: 0&M             | 21,9 ft. |
| gth: 11<br>gth: 11      |                       |                                              | +@                     | At 41.1 ft. 1/.<br>CL - Crack Longitudinal<br>Rating: <mark>2</mark>                                   | 43.9 ft. |
| Aainline len            |                       |                                              | +0                     | Category: Structural<br>At 41.1 ft. 1/5<br>ISB - Infiltration Stain Barrel<br>Rating:<br>Category: 0&M |          |
| 2 01                    |                       |                                              | -\_+©                  | At 55.6 ft. 2/5<br>CC - Crack Circumferential<br>Rating:<br>Category: Structural                       | 65.8 ft. |
|                         |                       |                                              | \_+⊠                   | At 55.6 ft. 2/5<br>ISB - Infiltration Stain Barrel<br>Rating:                                          |          |
| 0                       | mitted: 29.8 ft.      |                                              | +0                     | Category: 0&M<br>At 87.7 ft. 7/5<br>FM - Fracture Multiple<br>Rating: 4<br>Category: Structural        | 87.7 ft. |

| Project name: Mainline ID:             |                           | Start date/time:      | Direction:         |                                                                   |           |
|----------------------------------------|---------------------------|-----------------------|--------------------|-------------------------------------------------------------------|-----------|
| Corporat<br>Clean & O<br>Weather:<br>1 | e Dr Dewater<br>CCTV      | CB-10_CB-22           | 12/2/2021 11:40    | )AM D                                                             |           |
| 5 ft.                                  | mitted: 87.7 ft.          |                       | + + 0              | At 87.7 ft. 7/5<br>ISB - Infiltration Stain Barrel<br>Rating:     | 87.7 ft.  |
| gth: 117.<br>gth: 117.                 |                           |                       |                    | Category: O&M                                                     | 102.6 ft. |
| Mainline len<br>Surveyed len           | Stopped at<br>on 12/2/202 | 108.9 ft. with flow 🛓 | + @<br>ACB 'CB-22' | At 117.5 ft.<br>ACB - Access Point Catch Basin<br>Comments: CB-22 | 117.5 ft. |



|           |               |                                                                      | Main Ins                                                                      | pection     | s Pipe    | e Run                                                                       |           |
|-----------|---------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------|-----------|-----------------------------------------------------------------------------|-----------|
| Pro       | iect r        | name:                                                                | Mainline ID:                                                                  | Citv:       |           | Street:                                                                     |           |
| Co<br>Cle | rpora<br>an & | te Dr Dewater<br>CCTV                                                | CB-12_CB-13                                                                   | Port        | smouth NH | Corporate Dr                                                                |           |
| Sta       | rt dat        | ce/time:                                                             | Direction:                                                                    | Weat        | ther:     | Location code:                                                              |           |
| 12/       | 2/202         | 21 12:24 PM                                                          | D                                                                             | 1           |           | В                                                                           |           |
| Sha       | ape:          |                                                                      | Material:                                                                     | Heig        | nt:       | Width:                                                                      |           |
| C         |               |                                                                      | RCP                                                                           | 15 in       |           |                                                                             |           |
|           |               |                                                                      |                                                                               | ACB 'CB-12' |           |                                                                             |           |
|           |               | Started a                                                            | t 0.0 ft. with flow 🛨                                                         | ,O          | + 🖸       | At 0.0 ft.<br>ACB - Access Point Catch Basin                                | 0.0 ft.   |
|           |               | on 12/2/:                                                            | 2021 12:24:04 PM 💙                                                            |             | +@        | Comments: CB-12<br>At 0.0 ft.<br>MWL - Miscellaneous Water                  | 25.6 ft.  |
|           |               | At 51.3 ft. 4/8 🙆<br>S01: DAE - Deposits Attached<br>Encrustation —— |                                                                               |             | +@        | Level<br>At 3.7 ft. 4/5<br>DAE - Deposits Attached<br>Encrustation          | 51.2 ft.  |
| 204.9 ft. | 204.9 ft.     |                                                                      | Rating: <mark>2</mark><br>Category: O&M                                       | 57 ft.      | +@        | Category: O&M<br>At 11.6 ft. 4/5<br>DAE - Deposits Attached<br>Encrustation | 76.8 ft.  |
| th:       | ÷             |                                                                      | At 108.3 ft. 4/8 🔟 🕇                                                          |             | 11        | Rating: 2<br>Category: O&M                                                  | 107 5 4   |
| he lengt  | /ed leng      | F01: DAE - De                                                        | posits Attached<br>Encrustation ——<br>Rating: <mark>2</mark><br>Category: Q&M | 4           | + 🖻       | At 39.9 ft. 4/8<br>DAE - Deposits Attached<br>Encrustation                  | 202.5 10  |
| inlir     | Ve)           |                                                                      | category: ocar                                                                |             |           | Rating: 2                                                                   | 128.1 ft. |
| Ma        | Sur           |                                                                      |                                                                               |             | ֩         | At 45.8 ft. 5/7<br>DSZ - Deposits Settled Other                             |           |
|           |               |                                                                      |                                                                               |             |           | Rating: 2<br>Category: O&M<br>Comments: Leaves                              | 153.7 tt. |
|           |               |                                                                      |                                                                               |             |           |                                                                             | 179.3 ft. |
|           |               | Stopped at                                                           | 204.9 ft with flow .                                                          |             | + 🖸       | At 204.9 ft.                                                                |           |
|           |               | on 12/2/202                                                          | 21 12:35:33 PM                                                                | Ô           |           | ACB - Access Point Catch Basin<br>Comments: CB-13                           | 204.9 ft. |
|           |               |                                                                      |                                                                               | ACB 'CB-13' |           |                                                                             |           |

















| -   |     |      |     |
|-----|-----|------|-----|
| Prr | 10C | t na | mo  |
| 110 | JUU | t na | me. |

Mainline ID:

DMH-124\_DMH-125

Start date/time: 11/30/2021 7:50 AM

Direction: D

Corporate Dr Dewater Clean & CCTV Weather:

1

Stopped at 197.0 ft. with flow \_\_\_\_\_ on 11/30/2021 9:46:53 AM







|                                                          |                                                                                                      | Main Ins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | pections Pipe                   | e Run                                                                                                                                                                                                  |                                                                       |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Project n<br>Corpora                                     | ame:<br>Ite Dr Dewater                                                                               | Mainline ID:<br>DMH-7_CB-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | City:<br>Portsmouth NH          | Street:<br>Corporate Dr                                                                                                                                                                                |                                                                       |
| Start dat<br>11/30/20                                    | ce/time:<br>021 2:47 PM                                                                              | Direction:<br>D<br>Material:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Weather:<br><b>1</b><br>Height: | Location code:<br><b>F</b><br>Width:                                                                                                                                                                   |                                                                       |
| С.                                                       |                                                                                                      | RCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 15 in.                          | widen.                                                                                                                                                                                                 |                                                                       |
|                                                          |                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AMH 'DMH-7'                     |                                                                                                                                                                                                        |                                                                       |
| Aainline length: 243.7 ft.<br>surveyed length: 243.7 ft. | Started a<br>on 11/30<br>Stopped<br>on 11/30<br>S01: ISJ - Infiltr<br>S02: DAE - De<br>F02: DAE - De | at 0.0 ft. with flow<br>)/2021 2:47:04 PM<br>at 0.0 ft. with flow<br>/2021 3:26:26 PM<br>At 17.9 ft. 3/9<br>tation Stain Joint<br>Rating:<br>Category: 0&M<br>At 17.9 ft. 3/9<br>tation Stain Joint<br>Rating:<br>Category: 0&M<br>At 17.9 ft. 3/9<br>tation Stain Joint<br>Rating:<br>Category: 0&M<br>At 45.6 ft. 3/9<br>tation Stain Joint<br>Rating:<br>Category: 0&M |                                 | At 0.0 ft.<br>AMH - Manhole<br>Comments: DMH-7<br>At 0.0 ft.<br>MWL - Miscellaneous Water<br>Level<br>At 49.0 ft. 6/.<br>DSZ - Deposits Settled Other<br>Rating: 2<br>Category: O&M<br>Comments: Brick | 0.0 ft.<br>30.5 ft.<br>60.9 ft.<br>91.4 ft.<br>121.9 ft.<br>152.3 ft. |
|                                                          |                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1 <b>1</b>                      |                                                                                                                                                                                                        | 182.8 ft.                                                             |
| ,                                                        | F01: ISJ - Infiltr                                                                                   | At 240.0 ft. 3/9 🙆 🖌<br>ation Stain Joint<br>Rating: 🛯                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | +@                              | At 229.8 ft. 6/.<br>OBB - Obstruction Brick or<br>Masonry<br>Rating: 2<br>Category: OBM                                                                                                                | 213.2 ft.                                                             |
|                                                          |                                                                                                      | Category: O&M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ACB 'CB-12'                     | At 243.7 ft.<br>ACB - Access Point Catch Basin<br>Comments: CB-12                                                                                                                                      | 243.7 ft.                                                             |







|                                                        | Main Ins                    | pections Pipe          | Main Inspections Pipe Run                                                                                                                                                                                                                                               |                                             |  |  |  |
|--------------------------------------------------------|-----------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--|--|--|
| Project name:<br>Corporate Dr Dewater                  | Mainline ID:<br>CB-22_CB-23 | City:<br>Portsmouth NH | Street:<br>Redhook Way                                                                                                                                                                                                                                                  |                                             |  |  |  |
| Start date/time:                                       | Direction:                  | Weather:               | Location code:                                                                                                                                                                                                                                                          |                                             |  |  |  |
| 12/2/2021 2:07 PM                                      | U                           | 1                      | C                                                                                                                                                                                                                                                                       |                                             |  |  |  |
| Shape:                                                 | Material:                   | Height:                | Width:                                                                                                                                                                                                                                                                  |                                             |  |  |  |
| c                                                      | RCP                         | 12 in.                 |                                                                                                                                                                                                                                                                         |                                             |  |  |  |
| Surveyed length: 61.5 ft.<br>Surveyed length: 61.5 ft. | 1.5 ft. against flow        | ACB 'CB-22'            | t 61.5 ft.<br>CB - Access Point Catch Basin<br>omments: CB-22<br>t 42.8 ft. 3/.<br>L - Crack Longitudinal<br>ating: 2<br>ategory: Structural<br>t 42.8 ft. 3/4<br>SB - Infiltration Stain Barrel<br>atig: 2<br>ategory: O&M<br>t 42.8 ft. 9/.<br>L - Crack Longitudinal | 0,0 ft.<br>15.4 ft.<br>30.8 ft.<br>46.1 ft. |  |  |  |
| Started at                                             | 0.0 ft. against flow 🔺      | Ra<br>Ca<br>♦ ◎ At     | ating: <mark>2</mark><br>ategory: Structural<br>t 37.3 ft. 5/7<br>SZ - Deposits Settled Other                                                                                                                                                                           |                                             |  |  |  |
| on 12/2/20                                             | 021 2:07:48 PM 🗕 📥          | ACB 'CB-23             | ating: 2<br>ategory: 0&M<br>omments: Leaves<br>t 0.0 ft.<br>CB - Access Point Catch Basin<br>omments: CB-23<br>t 0.0 ft.<br>WL - Miscellaneous Water<br>evel<br>t 0.0 ft. 5/7<br>SC - Deposits Settled Hard/<br>ompacted<br>ating: 2<br>ategory: 0&M                    | 61.5 ft.                                    |  |  |  |







| Main Inspections Pipe Run                             |                               |                        |                                                                                 |          |
|-------------------------------------------------------|-------------------------------|------------------------|---------------------------------------------------------------------------------|----------|
| Project name:<br>Corporate Dr Dewater<br>Clean & CCTV | Mainline ID:<br>DMH-72_OF-72A | City:<br>Portsmouth NH | Street:<br>Oak Ave                                                              |          |
| Start date/time:                                      | Direction:                    | Weather:               | Location code:                                                                  |          |
| 12/1/2021 8:47 AM                                     | D                             | 1                      | F                                                                               |          |
| Shape:                                                | Material:                     | Height:                | Width:                                                                          |          |
| С                                                     | RCP                           | 30 in.                 |                                                                                 |          |
|                                                       | A                             | MH 'DMH-72'            |                                                                                 |          |
| Started                                               | at 0.0 ft. with flow —        | + + + 0 +              | At 0.0 ft.                                                                      | 0.0 ft.  |
| on 12/1                                               | /2021 8:47:30 AM 🔸            |                        | AMH - Manhole<br>Comments: DMH-72                                               |          |
| Stopped                                               | at 0.0 ft. with flow 🖕 📝      | +04                    | At 0.0 ft.                                                                      |          |
| .11 on 12/1/<br>.11 9.62                              | 2021 9:13:09 AM 📥             |                        | MWL - Miscellaneous Water<br>Level                                              | 19.9 ft. |
| gth:<br>gth:                                          |                               | 1                      |                                                                                 | 39.8 ft. |
| nline len<br>veyed len                                |                               | + 🖸 A<br>F             | At 51.0 ft. 1/.<br>8 - Broken<br>Rating: <mark>4</mark><br>Category: Structural | 59.7 ft. |
| Sur                                                   |                               | + @ #                  | At 51.0 ft. 1/5<br>ISJ - Infiltration Stain Joint<br>Rating:                    |          |
|                                                       |                               |                        | At 59.2 ft. 3/5<br>RMJ - Roots Medium Joint<br>Rating: 3<br>Category: O&M       | 79.6 ft. |
|                                                       |                               | + 🖸 A<br>F<br>F        | At 63.4 ft. 3/5<br>RFJ - Roots Fine Joint<br>Rating:<br>Category: O&M           |          |
|                                                       |                               |                        | At 75.6 ft. 4/5<br>RFJ - Roots Fine Joint<br>Rating: <b>II</b><br>Category: O&M |          |
|                                                       |                               | + @ 4<br>F             | At 79.6 ft.<br>ADP - Access Point Discharge<br>Point<br>Comments: OF-72A        |          |





#### Project name:

#### Mainline ID:

Start date/time:

CB-35511030A\_DMH-2832 12/7/2021 10:44 AM

Direction:

U

#### Corporate Dr Dewater Clean & CCTV Weather:

| Omitted: 178.7 ft.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>+</b> ©     | At 115.3 ft. 6/9<br>DAE - Deposits Attached                                            | 178.7 ft. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------|-----------|
| At 115.3 ft. 3/5 At 115.3 ft. 3/5 At 115.3 ft. 3/5 Attached                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                | Rating: 2<br>Category: O&M                                                             |           |
| Rating: 2<br>Category: O&M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | _ <b>↑</b> [0] | At 96.8 ft. 9/.<br>B - Broken<br>Rating:                                               | 213.2 ft  |
| They were a second seco | <b>†</b> 101   | At 73.6 ft. 3/.<br>TBI - Tap Break-in Intruding<br>Dimension 1: 15.000                 |           |
| ♂ Omitted: 46.4 ft.<br>At 107.0 ft. 3/5 ☑ ♠                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | _              | Dimension 2: 3<br>Rating: Category: O&M                                                | 247.6 ft  |
| S03: DAE - Deposits Attached<br>Encrustation<br>Rating: 2<br>Category: O&M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | + @            | At 62.9 ft. 4/8<br>RFJ - Roots Fine Joint<br>Rating:<br>Category: O&M                  |           |
| At 102.3 ft. 4/8<br>F02: RTB - Roots Tap Barrel<br>Rating:<br>Category: 0&M<br>At 79.0 ft 4/8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>≜</b> [0]   | At 62.9 ft. 12/12<br>DAE - Deposits Attached<br>Encrustation<br>Rating: 2              |           |
| S02: RTB - Roots Tap Barrel<br>Rating: Category: 0&M<br>At 66.6 ft. 3/9 💿 🛉                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>≜</b> ©     | At 58.3 ft. 12/1<br>FC - Fracture Circumferential<br>Rating: 2<br>Category: Structural |           |
| F01: ISJ - Infiltration Stain Joint<br>Rating:<br>Category: O&M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | + ©1           | At 58.3 ft. 12/1<br>RFB - Roots Fine Barrel<br>Rating: 2<br>Category: O&M              |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _ <b>≜</b> ©   | At 55.0 ft. 4/8<br>RTJ - Roots Tap Joint<br>Rating: 2<br>Category: O&M                 |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | + ©            | At 50.8 ft. 3/9<br>RTJ - Roots Tap Joint<br>Rating: 2<br>Category: O&M                 |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | + ©            | At 46.4 ft. 4/5<br>RTJ - Roots Tap Joint<br>Rating: 2<br>Category: ORM                 |           |

Start date/time:

#### Corporate Dr Dewater Clean & CCTV

Weather:



CB-35511030A\_DMH-2832 12/7/2021 10:44 AM



# **Main Inspections Small Photos and Scoring**

| Mainline ID:          | City:         | Street:           | Project name:                        |
|-----------------------|---------------|-------------------|--------------------------------------|
| CB-35511030A_DMH-2832 | Portsmouth NH | Corporate Dr      | Corporate Dr Dewater<br>Clean & CCTV |
| Start date/time:      | Total length: | Weather:          | Surveyed by:                         |
| 12/7/2021 10:44 AM    | 294.0 ft.     | 1                 | Jon Latham                           |
| Upstream MH No:       | Depth US:     | Downstream MH No: | Depth DS:                            |
| CB-35511030A          |               | DMH-2832          |                                      |
| Shape:                | Material:     | Height:           | Width:                               |
| С                     | RCP           | 15 in.            |                                      |
| Additional info:      |               |                   |                                      |

#### Scores Calculated at: 12/15/2021 3:03:44 PM

|       |                  | Stru           |                 | O&M:                 |                  |                |                 | Ove                  | erall:      |                      |
|-------|------------------|----------------|-----------------|----------------------|------------------|----------------|-----------------|----------------------|-------------|----------------------|
| Grade | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Pipe Rating | Pipe Rating<br>Index |
| 1     | 0                |                |                 |                      | 17               |                |                 |                      |             |                      |
| 2     | 2                |                |                 |                      | 28               |                |                 |                      |             |                      |
| 3     | 0                | 6              | 4121            | 3.0                  | 18               | 63             | 362A            | 1.7                  | 69          | 1.8                  |
| 4     | 4                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 5     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |

| Distance                                                                                                                                                                                                                                                                                     | Dir. ForDista                                                                                                                           | From/To                     | Code | Modifier | Rating | Remarks  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------|----------|--------|----------|
| 0.0 ft.                                                                                                                                                                                                                                                                                      | U                                                                                                                                       | 1                           | AMH  |          |        | DMH-2832 |
| Start date/time: 1<br>Pipe segment rof<br>Project name: Cc<br>Surveyed by: Jor<br>City: Portsmouth<br>Streat: Corporate<br>Upstream MH No<br>Downstream MH No<br>Downstream MH No<br>Direction: U<br>Location code: F<br>Height: 15 In.<br>Width:<br>Shape: C<br>Material: RCP<br>Weather: 1 | 2/7/2021 10:44 AM<br>.: Sewer Main 'CB-355110<br>proprate Drive Underwood<br>I adham<br>NH<br>- ACB 'CB-35511039'<br>No: AMH 'DMH-2832' | 39_DMH-28327<br>I Engineers |      |          |        |          |

| Distance                                                                                                                                             | Dir. ForDista                      | From/To Co | de | Modifier | Rating | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------|----|----------|--------|---------|
| 0.0 ft.                                                                                                                                              | U                                  | / MV       | VL |          |        |         |
| 127/2021                                                                                                                                             | 10:48:39 AM                        | 10.0 FL    |    |          |        |         |
| 6.5 ft.                                                                                                                                              | U                                  | 3/9 IS.    | l  |          | 1      |         |
| Distance; 6.5 ft<br>ISJ - Inflittation S<br>Clock from 3 of C<br>Clock to: 9 of cloc<br>Rating; 11<br>Dimension 1<br>Dimension 1<br>Dimension 1<br>X | tain Joint<br>ock                  |            |    |          |        |         |
| 14.1 ft.                                                                                                                                             | U                                  | 12 / 12 DA | E  |          | 2      |         |
| Distance: 14.1 ft.,<br>DAE - Deposita A<br>Clock from 12 o'<br>Clock to: 12 o'clo<br>Rating: 2<br>Dimension 1<br>Dimension 2:<br>%:5 %               | tached Encrustation<br>clock<br>ch |            |    |          |        |         |

| Distance                                                                                                                                     | Dir. ForDista                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | From/To | Code | Modifier | Rating | Remarks |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|----------|--------|---------|
| 46.4 ft.                                                                                                                                     | U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4 / 5   | RTJ  |          | 2      |         |
| Distance: 46.4 ft.<br>RTJ - Roots Tap J<br>Clock from: 4 o'cl<br>Clock fto: 5 o'clock<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%: 5 % | oint<br>bek                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |      |          |        |         |
| 50.8 ft.                                                                                                                                     | U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3/9     | RTJ  |          | 2      |         |
| Distance: 50.8 ft.<br>RTJ - Roots Tap J<br>Clock from: So 'clock<br>Rating'2<br>Dimension 1:<br>Dimension 2:<br>%:15 %:                      | ent:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |      |          |        |         |
| 55.0 ft.                                                                                                                                     | U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4 / 8   | RTJ  |          | 2      |         |
| Distance: 55.0 ft.,<br>RTJ - Roots Tap J<br>Clock from:4 o'cl<br>Clock to:8 o'clock<br>Rating;2<br>Dimension 1:<br>Dimension 2:<br>%:[10 %   | ofint<br>of the second secon |         |      |          |        |         |

| Distance                                                                                                                                                  | Dir. ForDista       | From/To | Code | Modifier | Rating | Remarks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|------|----------|--------|---------|
| 58.3 ft.                                                                                                                                                  | U                   | 12 / 1  | FC   |          | 2      |         |
| Distance; 58.3 ft.<br>FC - Fracture Circ<br>Clock from: [12 or<br>Clock to: 1 or<br>Clock to: 1 or<br>Clock to: 1 or<br>Dimension 1<br>Dimension 2<br>74: | unterential<br>lock |         |      |          |        |         |
| 58.3 ft.                                                                                                                                                  | U                   | 12 / 1  | RFB  |          | 2      |         |
| Distance: 58.3 ft.<br>RFB - Roots Fine<br>Clock for for clock<br>Rating (2)<br>Dimension 1<br>Dimension 2<br>%                                            | Barrel              |         |      |          |        |         |
| 62.9 ft.                                                                                                                                                  | U                   | 4 / 8   | RFJ  |          | 1      |         |
| Distance: 62.9 ft.,<br>RFJ - Roots Fine<br>Clock from: 14 o'cl<br>Clock fo: 8 o'clocl<br>Rating: 11<br>Dimension 1<br>Dimension 2:<br>%:                  | loint<br>ot         |         |      |          |        |         |

| Distance                                                                                                                                                 | Dir. ForDista From/T | o Code | Modifier | Rating | Remarks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------|----------|--------|---------|
| 62.9 ft.<br>Distance:,62.9 ft.<br>DAE - Deposits At<br>Clock from:112 of<br>Clock to:112 of cloc<br>Rating:12<br>Dimension 1:<br>Dimension 2:<br>%:15 %  | U 12 / 12            | 2 DAE  |          | 2      |         |
| 66.6 ft.                                                                                                                                                 | U 3/9                | ISJ    |          | 1      |         |
| Distance; 66.6 ft.,<br>ISJ - Infiltration SI<br>Clock trom;3 o'cloc<br>Rating;11<br>Dimension 1:<br>Dimension 2:<br>%:                                   | tain Joint<br>ock    |        |          |        |         |
| 73.6 ft.                                                                                                                                                 | U 3 /                | ТВІ    |          | 3      |         |
| Distance: 73.6 ft.<br>TBI - Tap Break-in<br>Clock from: 3 o'cl<br>(clock to:<br>Rating: 13<br>Dimension 1: 15<br>Dimension 1: 15<br>Dimension 2: 3<br>%: | n Intruding<br>ock   |        |          |        |         |

| Distance                                                                                                                                                        | Dir. ForDista | From/To | Code | Modifier | Rating | Remarks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|------|----------|--------|---------|
| 79.0 ft.<br>Distance: 79.0 ft.,<br>RTB - Roota Tap E<br>Clock from: 4 of 0<br>Clock to: 8 of to:<br>Clock to: 8 of to:<br>Dimension 1<br>Dimension 2:<br>%: 5 % | U             | 4/8     | RTB  |          | 3      |         |
| 96.8 ft.                                                                                                                                                        | U             | 9 /     | В    |          | 4      |         |
| Distance: 96.8 ft.<br>B - Broken<br>Clock from: 9 o'cl<br>Clock to:<br>Rating: 4<br>Dimension 1:<br>Dimension 2:<br>%:                                          | St            |         |      |          |        |         |
| 102.3 ft.                                                                                                                                                       | U             | 4 / 8   | RTB  |          | 3      |         |
| Distance:,102.3 ft.<br>RTB - Roots Tap I<br>Clock form:14 o'cl<br>Clock to:[8 o'clock<br>Rating:]3<br>Dimension 1:<br>Dimension 2:<br>%-15 %                    |               |         |      |          |        |         |

| Distance                                                                              | Dir. ForDista        | From/To       | Code | Modifier | Rating | Remarks |
|---------------------------------------------------------------------------------------|----------------------|---------------|------|----------|--------|---------|
| 107.0 ft.                                                                             | U                    | 3/5           | DAE  |          | 2      |         |
| Distance: 107.0 ft.<br>DAE - Deposits At<br>Clock from: 3 o'cl                        | ttached Encrustation | Constant Star |      |          |        |         |
| Clock to: 5 o'clock<br>Rating: 2<br>Dimension 1:                                      |                      |               |      |          |        |         |
| Dimension 2:<br>%: 5 %                                                                | And St.              | "antity"      |      |          |        |         |
|                                                                                       | 1.2.                 | 21            |      |          |        |         |
|                                                                                       |                      | - Ar          |      |          |        |         |
|                                                                                       |                      |               |      |          |        |         |
|                                                                                       |                      | 1947          |      |          |        |         |
| 115.3 ft.                                                                             | U                    | 6/9           | DAE  |          | 2      |         |
| Distance: 115.3 ft,<br>DAE - Deposits At<br>Clock from: 6 o'cle                       | ttached Encrustation | New Or        |      |          |        |         |
| Clock to: 9 o'clock<br>Rating: 2<br>Dimension 1:                                      |                      |               |      |          |        |         |
| %: 5 %                                                                                |                      |               |      |          |        |         |
|                                                                                       | Column.              |               |      |          |        |         |
|                                                                                       | P. March             | Contra Contra |      |          |        |         |
|                                                                                       |                      |               |      |          |        |         |
|                                                                                       |                      |               |      |          |        |         |
| 115.3 ft.                                                                             | U                    | 3/5           | DAE  |          | 2      |         |
| Distance:,115.3 ft,<br>DAE - Deposits At<br>Clock from: 3 o'cl<br>Clock to: 5 o'clock | tached Encrustation  | 22.23         |      |          |        |         |
| Rating:2<br>Dimension 1:<br>Dimension 2:                                              | AN A                 |               |      |          |        |         |
|                                                                                       |                      |               |      |          |        |         |
|                                                                                       | (@)                  |               |      |          |        |         |
|                                                                                       |                      | 1             |      |          |        |         |
|                                                                                       |                      | No 2          |      |          |        |         |
|                                                                                       |                      |               |      |          |        |         |

| Distance                                                                                                                                      | Dir. ForDista               | From/To | Code | Modifier | Rating | Remarks |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------|------|----------|--------|---------|
| 147.6 ft.                                                                                                                                     | U                           | 3/5     | DAE  |          | 2      |         |
| Distance; 147.6 ft<br>DAE - Deposits AI<br>Clock from:3 o'cl<br>Clock to:5 o'clock<br>Rating:2<br>Dimension 1:<br>Dimension 2:<br>%:15 %      | tached Encrustrition<br>ock |         |      |          |        |         |
| 166.7 ft.                                                                                                                                     | U                           | 6 / 7   | OBB  |          | 2      |         |
| Distance:,166.7 ft.<br>OBS - Obstruction<br>Clock from: 16 o'cl<br>Clock to:,7 o'clock<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%: 5 % | Brick or Masonry<br>ock     |         |      |          |        |         |
| 176.1 ft.                                                                                                                                     | U                           | 7/9     | DAE  |          | 2      |         |
| Distance: 176.1 ft<br>DAE - Deposits A/<br>Clock from: 7 o'cl<br>Clock to: 9 o'clocl<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%:15 %   | tached Encrustation<br>eck  |         |      |          |        |         |

| Distance                                                                                                                                                                     | Dir. ForDista              | From/To | Code | Modifier | Rating | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|------|----------|--------|---------|
| Distance: 188.2 ft.<br>DAE = Deposits AT.<br>DAE = Deposits AT.<br>Clock from: 3 o'cl<br>Clock to: 6 o'clock<br>Rating: 2<br>Dimension 12<br>Dimension 2<br>74:15:35         | U<br>trepret Encrustration | 3 / 6   | DAE  | Modifier | 2      | Kemarks |
| 245.3 ft.                                                                                                                                                                    | U                          | 4 / 8   | RFJ  |          | 1      |         |
| Distance: 245.3 ft.<br>RFJ - Roots Fine .<br>Clock from: 4 o'cloc<br>Rating:11<br>Dimension 1:<br>Dimension 2:<br>%:                                                         | Joint<br>oct               |         |      |          |        |         |
| 267.4 ft.                                                                                                                                                                    | U                          | 4 / 8   | RFJ  |          | 1      |         |
| 267.4 ft.<br>Distance: 267.4 ft.<br>DSC = Dopokits S CE<br>Clock from: 5 CE<br>Clock from: 5 CE<br>Clock to: 7 Celocl<br>Rating 12<br>Dimension 12<br>Dimension 22<br>%:10 % | U                          | 5/7     | DSC  |          | 2      |         |

Modifier

| Distance | Dir. | ForDista | From/To | Code |
|----------|------|----------|---------|------|
| 294 0 ft | ш    |          | 1       | ACB  |

Rating Remarks

CB-35511030A

#### Distance: 294.0 ft. AMM - Manhole Clock from: Clock to:: Clock to:: Dimension 1: Dimension 2: W: CB-35511039A CB-35511039A

# Inspection's photos





Main Inspections Small Photos and Scoring






# **Main Inspections Small Photos and Scoring**

| Mainline ID:       | City:         | Street:           | Project name:                        |
|--------------------|---------------|-------------------|--------------------------------------|
| DMH-2832_DMH-2832A | Portsmouth NH | Corporate Dr      | Corporate Dr Dewater<br>Clean & CCTV |
| Start date/time:   | Total length: | Weather:          | Surveyed by:                         |
| 12/7/2021 2:49 PM  | 297.5 ft.     | 1                 | Jon Latham                           |
| Upstream MH No:    | Depth US:     | Downstream MH No: | Depth DS:                            |
| DMH-2832           |               | DMH-2832A         |                                      |
| Shape:             | Material:     | Height:           | Width:                               |
| С                  | RCP           | 15 in.            |                                      |
| Additional info:   |               |                   |                                      |

#### Scores Calculated at: 12/7/2021 2:54:14 PM

|       |                  | Stru           | ctural:         |                      | O&M:             |                |                 |                      | Overall:    |                      |
|-------|------------------|----------------|-----------------|----------------------|------------------|----------------|-----------------|----------------------|-------------|----------------------|
| Grade | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Pipe Rating | Pipe Rating<br>Index |
| 1     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 2     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 3     | 0                | 0              | 0000            | 0.0                  | 3                | 3              | 3100            | 3.0                  | 3           | 3.0                  |
| 4     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 5     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |

#### Observations

| Distance           | Dir. ForDista    | From/To     | Code               | Modifier Rating | Remarks   |
|--------------------|------------------|-------------|--------------------|-----------------|-----------|
| 0.0 ft.            | U                | 1           | AMH                |                 | DMH-2832A |
| Start date/time:_1 | 2/7/2021 2:49 PM | DHUL 2022AL | 2703-040 <b>*1</b> |                 |           |



Main Inspections Small Photos and Scoring

| Distance                                                                                                                                                   | Dir. ForDista          | From/To | Code | Modifier | Rating | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|------|----------|--------|---------|
| 0.0 ft.                                                                                                                                                    | U                      | 1       | MWL  |          |        |         |
| 127//2021                                                                                                                                                  | 2:50:30 PM             | 1.01    |      |          |        |         |
| 43.3 ft.                                                                                                                                                   | U                      | 10 / 12 | RPP  |          |        | Brick   |
| Distance: 43.3 ft.<br>RPP - Point Repaid<br>Clock from: 10 o's<br>Clock to: 12 o'clou<br>Rating:<br>Dimension 1:<br>Dimension 2:<br>%:<br>Bricks and Morto | r Patch<br>clock<br>ck |         |      |          |        |         |
| 44.3 ft.                                                                                                                                                   | U                      | 9 /     | ТВІ  |          | 3      |         |
| Distance: 44.3 ft.<br>TBI - Tap Breakin<br>Clock from:9 o'cl<br>Clock to:<br>Rating:3<br>Dimension 1:12<br>Dimension 2:3<br>%:                             | eck                    |         |      |          |        |         |

| Distance                                                                                                                                | Dir. ForDista | From/To | Code | Modifier R | Rating | Remarks           |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|------|------------|--------|-------------------|
| 45.2 ft.                                                                                                                                | U             | 1       | MSA  |            |        | Reversal complete |
| Distance: 45.2 ft.,<br>MSA - Miscellane<br>Clock from:<br>Clock to:<br>Rating:<br>Dimension 1:<br>Dimension 2:<br>%:<br>Reversal Comple | te            |         |      |            |        |                   |

Inspection's photos



|                                                                                                                                                                                        | Main Inspec                                                                                                                                                                                                                                                                                                                                                                                                                               | tions Pipe                                                               | e Run                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Project name:<br>Corporate Dr Dewater<br>Clean & CCTV                                                                                                                                  | Mainline ID:<br>DMH-2832_DMH-2832A                                                                                                                                                                                                                                                                                                                                                                                                        | City:<br>Portsmouth NH                                                   | Street:<br>Corporate Dr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                 |
| Start date/time:                                                                                                                                                                       | Direction:                                                                                                                                                                                                                                                                                                                                                                                                                                | Weather:                                                                 | Location code:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                 |
| 12/7/2021 12:45 PM                                                                                                                                                                     | D                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1                                                                        | С                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                 |
| Shape:                                                                                                                                                                                 | Material:                                                                                                                                                                                                                                                                                                                                                                                                                                 | Height:                                                                  | Height: Width:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                 |
| <u>с</u>                                                                                                                                                                               | RCP                                                                                                                                                                                                                                                                                                                                                                                                                                       | 15 in.                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| Started a<br>on 12/7/<br>S03: DSZ - Deposi<br>Comments: L<br>Stopped<br>on 12/7/<br>Omitted: 201 ft.<br>F03: DSZ - Deposi<br>Comments: L<br>S01: ISJ - Infiltra<br>F01: ISJ - Infiltra | AMH 'I<br>at 0.0 ft. with flow<br>'2021 12:45:57 PM<br>At 0.0 ft. 5/7 • +<br>ts Settled Other<br>Rating: 2<br>Category: 0&M<br>eaves and rocks<br>at 0.0 ft. with flow<br>2021 2:25:13 PM<br>At 41.8 ft. 5/7 • +<br>ts Settled Other<br>Rating: 2<br>Category: 0&M<br>eaves and rocks<br>At 81.3 ft. 8/4 • +<br>ation Stain Joint<br>Rating: 1<br>Category: 0&M<br>At 96.5 ft. 8/4 • +<br>ation Stain Joint<br>Rating: 1<br>Category: 0&M | DMH-2832'<br>+ @<br>+ @<br>+ @<br>+ @<br>+ @<br>+ @<br>+ @<br>+ @<br>+ @ | At 0.0 ft.<br>AMH - Manhole<br>Comments: DMH-2832<br>At 0.0 ft.<br>MWL - Miscellaneous Water<br>Level<br>At 5.6 ft. 7/10<br>DAE - Deposits Attached<br>Encrustation<br>Rating: 2<br>Category: 0&M<br>At 30.7 ft. 12/1<br>SSS - Surface Damage Surface<br>Spalling<br>Rating: 2<br>Category: Structural<br>At 41.8 ft. 6/.<br>OBZ - Obstruction Other<br>Rating: 2<br>Category: 0&M<br>Comments: Debris caught on joint<br>At 46.5 ft. 6/.<br>OBR - Obstruction Rocks<br>Rating: 2<br>Category: 0&M<br>At 54.4 ft. 6/9<br>ISJ - Infiltration Stain Joint<br>Rating: 1<br>Category: 0&M<br>At 68.3 ft. 7/5<br>DAE - Deposits Attached<br>Encentration | 0,0 ft.<br>48.3 ft.<br>96.5 ft. |

#### Project name:

1

#### Mainline ID:

DMH-2832\_DMH-2832A

Start date/time: 12/7/2021 12:45 PM Direction: D

Corporate Dr Dewater Clean & CCTV Weather:

|        | Omitted: 99.9 ft.                                                      | + 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | At 99.9 ft. 6/.<br>OBR - Obstruction Rocks                                                    | 99.9.8    |
|--------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------|
|        |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rating: 2<br>Category: 0&M                                                                    | 3313 14   |
|        | At 143.8 ft. 4/9 🙆 ♦<br>S02: ISGT - Intruding Sealing                  | +0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | At 110.8 ft. 5/9<br>ISGT - Intruding Sealing<br>Material Grout                                |           |
|        | Material Grout –<br>Ratino: 2                                          | to the second se | Rating:                                                                                       | 149.3 ft. |
| t d    | Category: O&M                                                          | / / • 🛛                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | At 139.8 ft. 4/5                                                                              |           |
| 97.    | At 149.7 ft. 4/9 DI V<br>F02: ISGT - Intruding Sealing                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Material Grout                                                                                |           |
| 2      | Material Grout —<br>Rating: 2                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rating: 2<br>Category: O&M                                                                    | 1000000   |
| engt   | Category: O&M                                                          | +0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | At 230.6 ft 0/                                                                                | 198.7 ft. |
| e le   | ea r                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | TBD - Tap Break-in/Hammer                                                                     |           |
| ainlin | At 252.0 ft. 3/. 🗐 🕇                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Dimension 1: 15.000                                                                           |           |
| Σ      | 7 TBI - Tap Break-in Intruding<br>Dimension 1: 12.000                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Dimension 2: 3<br>Rating:                                                                     | 248.1 ft. |
|        | Dimension 2: 6<br>Rating:<br>Category: O&M<br>Comments: Defective seal |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Category: O&M<br>Comments: Defective - reinforcemen<br>and broken pipe visible<br>around seal | nt        |
|        |                                                                        | +0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | At 245.8 ft. 5/7<br>DSZ - Deposits Settled Other                                              |           |
|        |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rating: 2<br>Category: 0&M<br>Commente: Unknown substance                                     | 297.5 ft. |
|        |                                                                        | +0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | At 252.3 ft.                                                                                  |           |
|        |                                                                        | AMH 'DMH-2832A'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MSA - Miscellaneous Survey<br>Abandoned                                                       |           |
|        |                                                                        | <u> </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Category: O&M<br>Comments: Unable to pavigate                                                 |           |
|        |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | around intruding service<br>needs reversal                                                    | 1 -       |

Main Inspections Pipe Run



# **Main Inspections Small Photos and Scoring**

| Mainline ID:       | City:         | Street:           | Project name:                        |
|--------------------|---------------|-------------------|--------------------------------------|
| DMH-2832_DMH-2832A | Portsmouth NH | Corporate Dr      | Corporate Dr Dewater<br>Clean & CCTV |
| Start date/time:   | Total length: | Weather:          | Surveyed by:                         |
| 12/7/2021 12:45 PM | 297.5 ft.     | 1                 | Jon Latham                           |
| Upstream MH No:    | Depth US:     | Downstream MH No: | Depth DS:                            |
| DMH-2832           |               | DMH-2832A         |                                      |
| Shape:             | Material:     | Height:           | Width:                               |
| С                  | RCP           | 15 in.            |                                      |
| Additional info:   |               |                   |                                      |

#### Scores Calculated at: 12/7/2021 2:25:14 PM

|       | Structural:      |                |                 |                      |                  | O&M:           |                 |                      |             | Overall:             |  |
|-------|------------------|----------------|-----------------|----------------------|------------------|----------------|-----------------|----------------------|-------------|----------------------|--|
| Grade | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Pipe Rating | Pipe Rating<br>Index |  |
| 1     | 0                |                |                 |                      | 1                |                |                 |                      |             |                      |  |
| 2     | 0                |                |                 |                      | 104              |                |                 |                      |             |                      |  |
| 3     | 0                | 0              | 0000            | 0.0                  | 6                | 116            | 5132            | 2.1                  | 116         | 2.1                  |  |
| 4     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |  |
| 5     | 0                |                |                 |                      | 5                |                |                 |                      |             |                      |  |

| Distance           | Dir. ForDista     | From/To           | Code | Modifier | Rating | Remarks  |
|--------------------|-------------------|-------------------|------|----------|--------|----------|
| 0.0 ft.            | D                 | 1                 | АМН  |          |        | DMH-2832 |
| Start date/time:_1 | 2/7/2021 12:45 PM | NATION NETWOORDED |      |          |        |          |



| Distance                                                                                                                  | Dir. ForDista    | From/To | Code | Modifier | Rating | Remarks          |
|---------------------------------------------------------------------------------------------------------------------------|------------------|---------|------|----------|--------|------------------|
| 0.0 ft.                                                                                                                   | D                | /       | MWL  |          |        |                  |
| 0.0 ft.                                                                                                                   | D<br>12:52:17 PM | 5 / 7   | DSZ  |          | 2      | Leaves and rocks |
| 5.6 ft.<br>DAE - Deposita A<br>Clock from:6 o'cl<br>Clock to:10 o'clo<br>Rating:2<br>Dimension 1<br>Dimension 2:<br>W:5 % | D                | 7 / 10  | DAE  |          | 2      |                  |

| Distance   | Dir. ForDista | From/To | Code | Modifier | Rating | Remarks                |
|------------|---------------|---------|------|----------|--------|------------------------|
| 30.7 ft.   | D             | 12 / 1  | SSS  |          | 2      |                        |
| 127/2021   | 12:57:39 PM   | 30.7    | Æ    |          |        |                        |
| 41.8 ft.   | D             | 5 / 7   | DSZ  |          | 2      | Leaves and rocks       |
| -12/7/2021 | 12:58:01 PM   |         | f2   |          |        |                        |
| 41.8 ft.   | D             | 6 /     | OBZ  |          | 2      | Debris caught on joint |
| 127/2021   | 12:58:01 PM   |         |      |          |        |                        |

| Distance                                                                                                                                    | Dir. ForDista | From/To | Code | Modifier | Rating | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|------|----------|--------|---------|
| 46.5 ft.                                                                                                                                    | D             | 6 /     | OBR  |          | 2      |         |
| 12/7/2021                                                                                                                                   | 12:50:16 PM   | 45.5    |      |          |        |         |
| 54.4 ft.                                                                                                                                    | D             | 6/9     | ISJ  |          | 1      |         |
| Distance: 54.4 R.<br>ISJ - Infiltration SI<br>Clock from: 6 o'clic<br>Clock fo: 8 o'clock<br>Rating: 11<br>Dimension 1<br>Dimension 2<br>%: | ain Joint     |         |      |          |        |         |
| 68.3 ft.                                                                                                                                    | D             | 7 / 5   | DAE  |          | 2      |         |
| 127/2021                                                                                                                                    | 12:59:18 PM   | 65.2    | n R  |          |        |         |

| Distance      | Dir. ForDista | From/To Code | Modifier | Rating Remarks |
|---------------|---------------|--------------|----------|----------------|
| 81.3 ft.      | D             | 8 / 4 ISJ    |          | 1              |
| 1271/2021     | L2E59E51 PM   | B1.3 ft      |          |                |
| 96.5 ft.      | D             | 8 / 4 ISJ    |          | 1              |
| <b>TENEDA</b> | LODE2 PM      | 96.5 ft      |          |                |
| 99.9 ft.      | D             | 6 / OBR      |          | 2              |
|               | 1:00:23 PM    | 99.94        |          |                |

| Distance                                                                                                                                    | Dir. ForDista                | From/To | Code   | Modifier | Rating | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------|--------|----------|--------|---------|
| 110.8 ft.                                                                                                                                   | D                            | 5/9     | ISGT   |          | 3      |         |
| 139.8 ft.                                                                                                                                   | D                            | 4 / 5   | ISGT   |          | 2      |         |
| Disantos, 1933 et<br>ISGT - Intruding 8<br>Clock from: 4 o'd<br>Clock to: 5 o'cloci<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%: 5 %  | eeling Material Grout<br>ook |         |        |          |        |         |
| 143.8 ft.                                                                                                                                   | D                            | 4/9     | ISGT   |          | 2      |         |
| Distance: 143.8 ft<br>ISGT - Intruding E<br>Clock from: 4 o'cl<br>Clock to: 9 o'cloc<br>Rating: 12<br>Dimension 1:<br>Dimension 2:<br>%:5 % | eeling Material Grout<br>ock |         | ,<br>, |          |        |         |



| Distance                                                                                                                                                | Dir. ForDista        | From/To           | Code  | Modifier | Rating | Remarks                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|-------|----------|--------|-----------------------------------------------------------------------|
| 252.0 ft.                                                                                                                                               | D                    | 3 /               | ТВІ   |          | 5      | Defective seal                                                        |
| Distance: 252.0 ft<br>TBI - Tap Break-i<br>Clock from: 3 o'c<br>Clock to:<br>Rating: 5<br>Dimension 1: 12<br>Dimension 2: 6<br>%:                       | 1 Intruding<br>lock  |                   | A THE |          |        |                                                                       |
| 252.3 ft.                                                                                                                                               | D                    | 1                 | MSA   |          |        | Unable to navigate<br>around intruding<br>service - needs<br>reversal |
| Distance:,252.3 ft<br>MSA - Miscellane<br>Clock from:<br>Clock to:<br>Rating:<br>Dimension 1:<br>Dimension 1:<br>Dimension 2:<br>%:<br>Unable to naviga | ous Survey Abandoned | ce. needs reversa |       |          |        |                                                                       |

## Inspection's photos







| Project name:                        | Mainline ID:        | Start date/time:  | Direction: |
|--------------------------------------|---------------------|-------------------|------------|
| Corporate Dr Dewater<br>Clean & CCTV | DMH-2832A_DMH-2832B | 12/7/2021 2:27 PM | U          |
| Weather:                             |                     |                   |            |
| 1                                    |                     |                   |            |
|                                      |                     |                   |            |





# **Main Inspections Small Photos and Scoring**

| Mainline ID:        | City:         | Street:           | Project name:                        |
|---------------------|---------------|-------------------|--------------------------------------|
| DMH-2832A_DMH-2832B | Portsmouth NH | Corporate Dr      | Corporate Dr Dewater<br>Clean & CCTV |
| Start date/time:    | Total length: | Weather:          | Surveyed by:                         |
| 12/7/2021 2:27 PM   | 198.5 ft.     | 1                 | Jon Latham                           |
| Upstream MH No:     | Depth US:     | Downstream MH No: | Depth DS:                            |
| DMH-2832A           |               | DMH-2832B         |                                      |
| Shape:              | Material:     | Height:           | Width:                               |
| С                   | RCP           | 15 in.            |                                      |
| Additional info:    |               |                   |                                      |

#### Scores Calculated at: 12/7/2021 2:49:02 PM

|       | Structural:      |                |                 |                      | 0                | &M:            |                 | Ove                  | erall:      |                      |
|-------|------------------|----------------|-----------------|----------------------|------------------|----------------|-----------------|----------------------|-------------|----------------------|
| Grade | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Pipe Rating | Pipe Rating<br>Index |
| 1     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 2     | 2                |                |                 |                      | 66               |                |                 |                      |             |                      |
| 3     | 0                | 2              | 2100            | 2.0                  | 3                | 97             | 4731            | 2.4                  | 99          | 2.4                  |
| 4     | 0                |                |                 |                      | 28               |                |                 |                      |             |                      |
| 5     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |

| Distance                                                                                                                                                                                                                                | Dir. ForDista                                                                                                                                    | From/To                   | Code | Modifier | Rating | Remarks   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|----------|--------|-----------|
| 0.0 ft.                                                                                                                                                                                                                                 | U                                                                                                                                                | 1                         | AMH  |          |        | DMH-2832B |
| Start date/time: 1<br>Pipe segment rof<br>Project name: Cc<br>Surveyed by: Jon<br>City: Portsmouth<br>Upstream MH No<br>Downstream MH<br>Direction: JU<br>Location code: F<br>Height: 15 n.<br>Shape: C<br>Material: IRCP<br>Weather: 1 | 2/7/2021 2:27 PM<br>.: Storm Main 'DMH-2832<br>orporate Drive Underwood<br>I atham<br>: NH<br>: Dri<br>: AMH 'DMH-2832A'<br>No: JAMH 'DMH-2832B' | A DMH-28328<br>i Engineer |      |          |        |           |

| Distance                                                                                                               | Dir. ForDista F       | rom/To | Code         | Modifier | Rating | Remarks |
|------------------------------------------------------------------------------------------------------------------------|-----------------------|--------|--------------|----------|--------|---------|
| 0.0 ft.                                                                                                                | U                     | 1      | MWL          |          |        |         |
| -12/7/2021                                                                                                             | 21372445 PM           | 13.    | 3 <b>R</b> . |          |        |         |
| 0.0 ft.                                                                                                                | U                     | 1      | MCU          |          | 4      |         |
| Distance: 0.0 ft<br>MCU - Miscollano:<br>Clock from:<br>Clock to:<br>Rating: 4<br>Dimension 1:<br>Dimension 2:<br>%:   | ous Camera Underwater |        |              |          |        |         |
| 33.8 ft.                                                                                                               | U                     | 1      | MCU          |          | 4      |         |
| Distance: 33.8 ft.,<br>MCU - Miscellane:<br>Clock from:<br>Clock to:<br>Rating:4<br>Dimension 1:<br>Dimension 2:<br>%: | pus Camera Underwater |        |              |          |        |         |



| Distance                                                                                                                                    | Dir. ForDista              | From/To | Code | Modifier | Rating | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|------|----------|--------|---------|
| 147.3 ft.                                                                                                                                   | U                          | 12 / 12 | RFB  |          | 2      |         |
| Distance: 147.3 ft<br>RFB - Roots Fine<br>Clock from: 12 o'c<br>Clock to: 12 o'cloc<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%:      | Barrel)<br>loch            |         |      |          |        |         |
| 160.5 ft.                                                                                                                                   | U                          | 5 / 7   | DSGV |          | 2      |         |
| Distance:,160.5 ft<br>DSGV - Doposits<br>Clock from: 5 o'cl<br>Clock tri]? o'cloc<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%:10 %    | Settled Gravel             |         |      |          |        |         |
| 187.9 ft.                                                                                                                                   | U                          | 4 / 8   | DAE  |          | 2      |         |
| Distance; 187.9 ft.<br>DAE - Deposits Al<br>Clock from;4 o'cl<br>Clock to: 8 o'clock<br>Rating;12<br>Dimension 1:<br>Dimension 2:<br>%;10 % | tached Encrustation<br>oct |         |      |          |        |         |

| Distance                                                                                                                                  | Dir. ForDista  | From/To | Code | Modifier | Rating | Remarks   |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|------|----------|--------|-----------|
| 187.9 ft.                                                                                                                                 | U              | 5/7     | DSGV |          | 2      |           |
| Distance: 187.9 ft.<br>DSGV - Doposita<br>Clock form: 5 o'cl<br>Clock for 7 o'clocl<br>Rating: 2<br>Dimension 1<br>Dimension 2:<br>%:10 % | Settled Gravel |         |      |          |        |           |
| 198.5 ft.                                                                                                                                 | U              | 1       | АМН  |          |        | DMH-2832A |
| Distance; 198.5 ft<br>AMH - Manhole<br>Clock from:<br>Clock to:<br>Rating:<br>Dimension 1:<br>Dimension 2:<br>%:<br>DMH-2832A             |                |         |      |          |        |           |

## Inspection's photos







# **Main Inspections Small Photos and Scoring**

| Mainline ID:      | City:         | Street:           | Project name:                        |
|-------------------|---------------|-------------------|--------------------------------------|
| CB-117_CB-118     | Portsmouth NH | Corporate Dr      | Corporate Dr Dewater<br>Clean & CCTV |
| Start date/time:  | Total length: | Weather:          | Surveyed by:                         |
| 12/8/2021 1:00 PM | 162.6 ft.     | 1                 | Jon Latham                           |
| Upstream MH No:   | Depth US:     | Downstream MH No: | Depth DS:                            |
| CB-117            |               | CB-118            |                                      |
| Shape:            | Material:     | Height:           | Width:                               |
| С                 | RCP           | 18 in.            |                                      |
| Additional info:  |               |                   |                                      |

#### Scores Calculated at: 12/8/2021 1:12:18 PM

|       |                  |                | O&M:            |                      |                  |                | Ove             | erall:               |             |                      |
|-------|------------------|----------------|-----------------|----------------------|------------------|----------------|-----------------|----------------------|-------------|----------------------|
| Grade | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Pipe Rating | Pipe Rating<br>Index |
| 1     | 0                |                |                 |                      | 28               |                |                 |                      |             |                      |
| 2     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 3     | 0                | 0              | 0000            | 0.0                  | 0                | 28             | 1D00            | 1.0                  | 28          | 1.0                  |
| 4     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 5     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |

| Distance                                                                                                                                                                                                                                                               | Dir. ForDista                                                                                                                   | From/To  | Code | Modifier | Rating | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------|------|----------|--------|---------|
| 0.0 ft.                                                                                                                                                                                                                                                                | U                                                                                                                               | 1        | ACB  |          |        | CB-118  |
| Start date/time: 1<br>Pipe segment rof<br>Project name: Cc<br>Surveyed by: Jor<br>City: Portsmouth<br>Street: (Corporate<br>Upstream MH No<br>Downstream MH<br>Direction: U<br>Location code: B<br>Height: 18 in.<br>Width:<br>Shape: C<br>Material: RCP<br>Weather: 1 | 2/8/2021 1:00 PM<br>.:Storm Main 'CB-117_CE<br>proprate Drive Underwood<br>h Latham<br>NH<br>2 ACB 'CB-117'<br>No: ACB 'CB-118' | Engineer |      |          |        |         |



| Distance                                                                                                                     | Dir. ForDista   | From/To | Code | Modifier | Rating | Remarks |
|------------------------------------------------------------------------------------------------------------------------------|-----------------|---------|------|----------|--------|---------|
| 162.6 ft.                                                                                                                    | U               | 1       | ACB  |          |        | CB-117  |
| Distance; 162.6 ft<br>ACB - Access Po<br>Clock from;<br>Clock to:<br>Rating:<br>Dimension 1:<br>Dimension 2:<br>%:<br>CB-117 | Int Catch Basin |         |      |          |        |         |

Inspection's photos



| Project name: Mainline ID: City: Street:   Corporate Dr Dewater CB-118 CB-119 Portsmouth NH Corporate Dr |           |
|----------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                          |           |
| Clean & CCTV                                                                                             |           |
| Start date/time: Direction: Weather: Location code:                                                      |           |
| 12/8/2021 11:38 AM D 1 C                                                                                 |           |
| Shape: Material: Height: Width:                                                                          |           |
| <u>C RCP 18 in.</u>                                                                                      |           |
| ACB 'CB-118'                                                                                             |           |
| Started at 0.0 ft, with flow - + At 0.0 ft.                                                              | 0.0 ft.   |
| on 12/8/2021 11:38:24 AM                                                                                 |           |
| ↓ (i) At 0.0 ft.                                                                                         |           |
| MWL - Miscellaneous Water<br>Level                                                                       | 30.0 ft.  |
| ↓ Ø At 65.7 ft 12/12                                                                                     |           |
| At 69.9 ft. 3/9 III + B - Broken                                                                         | 60.0 ft.  |
| Rating: 4                                                                                                |           |
| Category: O&M                                                                                            | 90.0 ft.  |
| At 105.9 ft. 5/7 🖾 🕈                                                                                     |           |
| ≓ ≓ Rating: 2                                                                                            | 14410100  |
| Category: O&M CC - Crack Circumferential                                                                 | 120,1 ft. |
| At 118.9 ft. 5/7  At 118.9 ft. 5/7  Category: Structural                                                 |           |
| Rating: 2 At 122.9 ft. 2/5                                                                               | 150.1 ft. |
| Category: O&M                                                                                            |           |
| ↓ Q At 133.0 ft. 7/10                                                                                    | 180.1 ft. |
| At 201.3 ft. 3/9 🕑 🕈 ISB - Infiltration Stain Barrel                                                     |           |
| Rating:                                                                                                  | 210.1 ft. |
| Category: O&M                                                                                            |           |
| ISGT - Intruding Sealing                                                                                 |           |
| Material Grout                                                                                           | 240.1 ff. |
| Category: 0&M                                                                                            |           |
| S03: IS - Infiltration Stain                                                                             |           |
| Rating:                                                                                                  |           |
| Category: O&M Rating: Category: O&M                                                                      |           |

| Project name:                                   | Mainline ID:                                                                        | Start date/time: | Direction:                                                                                                                                                   |
|-------------------------------------------------|-------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Corporate Dr I<br>Clean & CCTV<br>Weather:<br>1 | Dewater CB-118_CB-119                                                               | 12/8/2021 11:38  | AM D                                                                                                                                                         |
| 302.2 ft.<br>302.2 ft.                          | : 265 ft.                                                                           | + @              | At 265.0 ft.<br>MWL - Miscellaneous Water 265.0 ft.                                                                                                          |
| length:<br>d length:                            | At 300.9 ft. 3/9 🙆 ♦<br>F03: IS - Infiltration Stain                                | +@               | Level<br>At 300.8 ft. 4/8<br>RMJ - Roots Medium Joint                                                                                                        |
| Surveye                                         | Rating: Category: O&M<br>Stopped at 302.2 ft. with flow<br>on 12/8/2021 12:21:55 PM | + ©              | Rating: 302.2 ft.<br>Category: O&M<br>At 302.2 ft.<br>MSA - Miscellaneous Survey<br>Abandoned<br>Category: O&M<br>Comments: Unable to navigate past<br>roots |



# **Main Inspections Small Photos and Scoring**

| Mainline ID:       | City:         | Street:           | Project name:                        |
|--------------------|---------------|-------------------|--------------------------------------|
| CB-118_CB-119      | Portsmouth NH | Corporate Dr      | Corporate Dr Dewater<br>Clean & CCTV |
| Start date/time:   | Total length: | Weather:          | Surveyed by:                         |
| 12/8/2021 11:38 AM | 302.2 ft.     | 1                 | Jon Latham                           |
| Upstream MH No:    | Depth US:     | Downstream MH No: | Depth DS:                            |
| CB-118             |               | CB-119            |                                      |
| Shape:             | Material:     | Height:           | Width:                               |
| С                  | RCP           | 18 in.            |                                      |
| Additional info:   |               |                   |                                      |

#### Scores Calculated at: 12/8/2021 12:21:56 PM

|       |                  |                |                 | carculat             |                  | •/=•=•         |                 | -                    |             |                      |
|-------|------------------|----------------|-----------------|----------------------|------------------|----------------|-----------------|----------------------|-------------|----------------------|
|       |                  | Stru           | ctural:         |                      | O&M:             |                |                 |                      | Ove         | erall:               |
| Grade | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Segment<br>Grade | Pipe<br>Rating | Quick<br>Rating | Pipe Rating<br>Index | Pipe Rating | Pipe Rating<br>Index |
| 1     | 1                |                |                 |                      | 41               |                |                 |                      |             |                      |
| 2     | 0                |                |                 |                      | 8                |                |                 |                      |             |                      |
| 3     | 0                | 5              | 4111            | 2.5                  | 3                | 52             | 3124            | 1.1                  | 57          | 1.2                  |
| 4     | 4                |                |                 |                      | 0                |                |                 |                      |             |                      |
| 5     | 0                |                |                 |                      | 0                |                |                 |                      |             |                      |

| Distance                                                                                                                                                                                                                                                                                 | Dir. ForDista                                                                                                                                 | From/To               | Code | Modifier | Rating | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|----------|--------|---------|
| 0.0 ft.                                                                                                                                                                                                                                                                                  | D                                                                                                                                             | 1                     | ACB  |          |        | CB-118  |
| Start date/time: 1<br>Pipe segment ref<br>Project name: Co<br>Surveyed by: Joi<br>City: Portsmouth<br>Upstreat: Corporate<br>Upstream MH No<br>Downstream MH No<br>Downstream MH Direction: D<br>Location code: C<br>Height: 13 in.<br>Width:<br>Shape: C<br>Material: RCP<br>Weather: 1 | 12/8/2021 11:38 AM<br>.: Storm Main 'CB-118_CE<br>porporate Drive Underwood<br>h Edham<br>I NH<br>9 Dr.<br>: ACB 'CB-118'<br>No: ACB 'CB-118' | 3-1197<br>d Engineers |      |          |        |         |



| Distance                                                                                                                                      | Dir. ForDista | From/To | Code | Modifier | Rating | Remarks |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|------|----------|--------|---------|
| 105.9 ft.                                                                                                                                     | D             | 5/7     | DSF  |          | 2      |         |
| Distance:,105.9 ft.<br>DSF - Deposits So<br>Clock from:[5 o'clock<br>(7 o'clock<br>Rating:]2<br>Dimension 1:<br>Dimension 2:<br>%;10 %        | ttled Fine    |         |      |          |        |         |
| 118.9 ft.                                                                                                                                     | D             | 5/7     | DSF  |          | 2      |         |
| Distance; 118.9 ft,<br>DSF - Deposits So<br>Clock from: 5 o'clo<br>Clock to: 7 o'clock<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%:10 % | the Fine      |         |      |          |        |         |
| 122.9 ft.                                                                                                                                     | D             | 2/6     | CC   |          | 1      |         |
| Distance: 1229 ft,<br>CC - Grack Circun<br>Clock from: 2 o'clo<br>Clock to 6 o'clock<br>Rating: 11<br>Dimension 1<br>Dimension 2<br>%         | Incented      |         |      |          |        |         |

| Distance                                                                                                                                   | Dir. ForDista            | From/To | Code | Modifier | Rating | Remarks |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------|------|----------|--------|---------|
| 122.9 ft.                                                                                                                                  | D                        | 2/5     | ISB  |          | 1      |         |
| Distance:,122.9 ft.<br>158 - Infiltration S<br>Clock from:2 o'cl<br>Clock to: 5 o'cloci<br>Rating:11<br>Dimension 1:<br>Dimension 2:<br>%: | tain Barro)<br>oct       |         |      |          |        |         |
| 133.0 ft.                                                                                                                                  | D                        | 7 / 10  | ISB  |          | 1      |         |
| Distance:,133.0 ft<br>ISB = Infiltration S<br>Clock from:/7 o'cl<br>Clock to:/10 o'clo:<br>Rating:/1<br>Dimension 1:<br>Dimension 2:<br>%: | tain Barrol<br>ock<br>sk |         |      |          |        |         |
| 171.0 ft.                                                                                                                                  | D                        | 6 / 7   | ISGT |          | 2      |         |
| Distance: 171.0 ft<br>ISGT - Intruding S<br>Clock trom:6 of C<br>Clock tro: 7 o'cloc<br>Rating: 2<br>Dimension 1:<br>Dimension 2:<br>%:5 % | ealing Material Grout    |         |      |          |        |         |

| Distance                                                                                                                                  | Dir. ForDista | From/To | Code  | Modifier | Rating | Remarks |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|-------|----------|--------|---------|
| 201.3 ft.                                                                                                                                 | D             | 3/9     | IS    |          | 1      |         |
|                                                                                                                                           | 12:08:33 PM   | 202     | 3 ft. |          |        |         |
| 217.6 ft.                                                                                                                                 | D             | 2 / 10  | ISB   |          | 1      |         |
| Distance: 217.6 ff<br>ISB - Infiltration 8<br>Clock from 2 of C<br>Clock to: 10 o clo<br>Rating: 11<br>Dimension 1:<br>Dimension 2:<br>%: |               |         |       |          |        | _       |
| 240.1 ft.                                                                                                                                 | D             | 3/9     | IS    |          | 1      |         |
| Distance: 240.1 ft<br>IS - Infiltration St<br>Clock from: 3 o'c<br>Clock to: 9 o'cloc<br>Rating: 1<br>Dimension 1:<br>Dimension 1:<br>W:  | ain<br>ock    |         |       |          |        |         |



| Distance                                                                                                                                     | Dir. ForDista         | From/To           | Code | Modifier F | Rating | Remarks                          |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------|------|------------|--------|----------------------------------|
| 302.2 ft.                                                                                                                                    | D                     | 1                 | MSA  |            |        | Unable to navigate<br>past roots |
| Distance:,302.2 ft<br>MSA - Miscellane<br>Clock from:<br>Clock to:<br>Dimension 1:<br>Dimension 1:<br>Dimension 2:<br>%:<br>Unable to naviga | tous Survey Abandoned | o get into downst | ream |            |        |                                  |
| catch basin                                                                                                                                  | 6                     |                   |      |            |        |                                  |

Inspection's photos