PROJECT MANUAL

FOR

AUBURN ASH LANDFILL LEACHATE FORCEMAIN
BID #2017-034

PREPARED FOR:
City of Auburn, Maine
Attn: Kristopher Bennett, Project Engineer
60 Court Street
Auburn, ME 04210
207.333.6601 Ext. 1134

MAY 2017
CES JN: 10473.009

PREPARED BY:
CES, Inc.
465 South Main Street
P.O. Box 639
Brewer, ME 04412
207.989.4824

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FOR

AUBURN ASH LANDFILL LEACHATE FORCEMAIN
BID #2017-034
MAY 2017

OWNER	CONTACT INFORMATION	
City of Auburn 60 Court Street Auburn, ME 04210	**Name:**	Kristopher Bennett
	Title:	Project Engineer
	Tel:	(207) 333-6601 Ext. 1134
	Fax:	(207) 333-6620
	email:	kbennett@auburnmaine.gov
ENGINEER/ARCHITECT	**CONTACT INFORMATION**	
CES, Inc. 465 South Main Street P.O. Box 639 Brewer, ME 04412	**Name:**	Nathan Gustafson, P.E.
	Title:	Project Manager
	Tel:	(207) 989-4824
	Fax:	(207) 989-4881
	email:	ngustafson@ces-maine.com
CONTRACTOR	**CONTACT INFORMATION**	
	Name:	
	Title:	
	Tel:	
	Fax:	
	email:	

City of Auburn, Maine
Finance Department
www.auburnmaine.gov | 60 Court Street
Auburn, Maine 04210
207.333.6601

May 8, 2017

Dear Bidder:

The City of Auburn is accepting written proposals for the Auburn Public Services Department's **Auburn Ash Landfill Leachate Forcemain.** The City reserves the right to accept or reject any or all proposals in whole or in part and to waive any informality the City may determine necessary. The City also reserves to itself the exclusive right to accept any proposal when it is deemed by the City to be in its best interest. The City of Auburn is governed by Title 1 M.R.S.A. § 401-410, otherwise known as the Freedom of Information Act, which considers bid specifications as public documents. In awarding any proposal, the City may consider, but not be limited to, any of the following factors: Bidder qualifications, price, experience, financial standing with the City, warranties, references, bonding, delivery date, and service of Bidder. Vendors/Contractors shall be current on all amounts due to the City of Auburn prior to the City entering into any contract agreement. All proposals must include FOB to Auburn, Maine unless otherwise specified.

Proposals will not receive consideration unless submitted in accordance with the following instructions to bidders. Please mark sealed envelopes plainly: **"Auburn Ash Landfill Leachate Forcemain – Bid #2017-034".**

Bid packages will be available beginning on Monday, May 8, 2017. Documents can be obtained from the City of Auburn's website: www.auburnmaine.gov/business/bid-notices. Hard copies of the Project Manual may be obtained at CES, Inc. located at 640 Main Street, Lewiston, ME 04240. There is a non-refundable payment of $150.00 for each set. A Mandatory Pre-Bid Meeting will be held at 2:30 pm on Tuesday, May 16, 2017 in the Community Room (206) at Auburn City Hall. Questions regarding this Request for Bids should be directed to Kristopher Bennett, Project Engineer, City of Auburn at (207) 333-6601, Ext 1134. All questions shall be submitted by end of day Friday, May 19, 2017 and an Addendum will be issued on Tuesday, May 23, 2017

Please submit your proposal to the City of Auburn by 2:30 p.m. **Thursday, May 25, 2017.** Proposals must be delivered to **Derek Boulanger, Facilities Manager/Purchasing Agent, 60 Court Street, Auburn, Maine 04210** on or before the date and time appointed. No proposals will be accepted after the time and date listed above. Proposals will be opened at 2:30 p.m. on that date in the Community Room (206), Auburn City Hall.

Sincerely,

Derek Boulanger
Facilities Manager/Purchasing Agent

CONDITIONS AND INSTRUCTIONS TO BIDDERS

1. Bidders shall use the enclosed bid form for quotations. Whenever, in bid forms, an article is defined by using a trade name or catalog number, the term "or approved equal", if not inserted, shall be implied.

2. Submit a separate unit price for each item unless otherwise specified in the bid request. Award will be made on a basis of each item, or as a group, whichever is in the best interest of the City. Prices stated are to be "delivered to destination".

3. Bid proposals must be completed in full, in ink and must be signed by firm official. Bid proposal **must be notarized** prior to bid being sealed and will be disqualified if not notarized. Bids may be withdrawn prior to the time set for the official opening

4. Bids will be opened publicly. Bidders or representatives may be present at bid opening.

5. Awards will be made to the lowest responsible bidder, considering the quality of the materials, date of delivery, cost which meets specification and is in the best interest to the City of Auburn.

6. All transportation charges, including expense for freight, transfer express, mail, etc. shall be prepaid and be at the expense of the vendor unless otherwise specified in the bid.

7. The terms and cash discounts shall be specified. Time, in connection with discount offered, will be computed from date of delivery at destination after final inspection and acceptance or from date of correct invoice, whichever is later.

8. The City is exempt from payment of Federal Excise Taxes on the articles not for resale, Federal Transportation Tax on all shipments and Maine Sales Tax and Use Taxes. Please quote less these taxes. Upon application, exemption certificate will be furnished with the Purchase Order when required.

9. No contract may be assigned without the written consent of the Purchasing Director or his designate. The contract shall not be considered valid until a purchase order has been issued to the successful bidder.

10. Please state "**Auburn Ash Landfill Leachate Forcemain – Bid #2017-034**", on submitted, sealed envelope.

11. The City of Auburn reserves the right to waive any formality and technicality in bids whichever is deemed best for the interest of the City of Auburn.

12. All work must be completed from 7:00 AM to 7:00 PM. The work shall be substantially complete within 75 days and completed and ready for final payment within 90 days. Liquidated damages of $500/calendar day will be assessed on uncompleted work. The

work shall be performed to meet all timing requirements stipulated in the Permits obtained for the project.

13. Surface restoration and seeding shall be completed following completion of construction. Exposed soils stabilization is considered incidental.

14. Clearing and Utility crossing of stream shall be within permitted window as authorized by MDEP, ACOE, and MDIF&W.

15. Contractor shall be required to obtain a Work Permit form the Maine Turnpike Authority and shall be subject to all rules, requirements and guidelines of the Maine Turnpike Authority.

GENERAL CONDITIONS

1. Equal Employment Opportunity

The City of Auburn is an Equal Opportunity Employer and shall not discriminate against an applicant for employment, and employee or a citizen because of race, color, sex, marital status, physical and/or mental handicap, religion, age, ancestry or natural origin, unless based upon a bona-fide occupation qualification. Vendors and contractor or their agents doing business with the City shall not violate the above clause or the Civil Rights Acts of 1964. Violations by vendors shall be reviewed on a case-by-case basis and may mean an automatic breach of contract or service to the City of Auburn.

2. Save Harmless

The Bidder agrees to protect and save harmless the owner from all costs, expenses or damages that may arise out of alleged infringement of patents of materials used.

3. Subcontracting

The Bidder shall not subcontract any part of the work or materials or assign any monies due it without first obtaining the written consent of the municipality. Neither party shall assign or transfer its interest in the contract without the written consent of the other party.

4. Warranty

The Bidder warrants that all work will be of good quality and free from faults and defects, and in conformance with the specifications. All work not so conforming to these standards may be considered defective. The Bidder agrees to be responsible for the acts and omissions of all of its employees and all subcontractors, their agents and employees, and all other persons performing any of the work under a contract with the Bidder.

5. Bonds, Retainage and Payments

A bid bond shall be submitted with appropriate bid forms in the amount of 5% of the total contract value. Also, payment and performance bonds will be required from the contractor who is awarded this contract. Retainage in the amount of 10% will be held from each progress payment and shall be released at the discretion of the Project Engineer. Payments shall be made by the City to the Contractor 30 days after receipt of the request for payment.

BID PROPOSAL FORM

Due: **Thursday, May 25, 2017**

To: City of Auburn
Derek Boulanger, Facilities Manager/Purchasing Agent
60 Court Street
Auburn, ME 04210

The undersigned individual/firm/business guarantees this price for Thirty days (30) from the bid due date. The undersigned submits this proposal without collusion with any other person, individual, or firm or agency. The undersigned ensures the authority to act on behalf of the corporation, partnership or individual they represent; and has read and agreed to all of the terms, requests, or conditions written herein by the City of Auburn, Maine. By signing this bid form, the firm listed below hereby affirms that its bid meets the minimum specifications and standards as listed above.

Signature _____Name (print) _____

Title_____Company_____

Address_____

Telephone No._____

Email Address: _____

STATE OF MAINE
_____, SS. Date: _____

Personally, appeared and acknowledged the foregoing instrument to be his/her free act and deed in his/her capacity and the free act and deed of said company.

Notary Public_____

Print Name_____

Commission Expires_____

BID FORM

MDOT ITEM	DESCRIPTION	UNIT	QNTY	UNIT COST	TOTAL COST
202.40	Site Work	LS	1		
203.22	Unclassified Excavation	CY	100		
203.35	Crushed Stone ¾-inch	CY	100		
206.07	Structural Rock Excavation-Drainage & Minor Structures	CY	50		
655.201	Overhead Electric Extension to Pump Station	ALLOW	1	$ 40,000.00	$ 40,000.00
801.092	4-Inch Diameter Force Main	LF	1,520		
802.21	Pump Station	EA	1		
802.22	Valve Pit	EA	1		
802.23	Air/Vacuum Release Manhole	EA	2		
656.75	Temporary Soil Erosion and Water Pollution Control	LS	1		
659.10	Mobilization	LS	1		
Total					

Written total amount is: _____

Company Name: _____

Signed by: _____

Title: _____

Print Name: _____

Address: _____

Tel. # _____

Date: _____

Addendum Acknowledged:

#_____Date_____

#_____Date_____

SCOPE OF WORK

The following scope of work is being proposed for the Auburn Ash Landfill Leachate Forcemain for the City of Auburn. The scope of work is a brief overview of the expected extent of work on the street included in this contract. This is only a proposed scope with associated estimated quantities. Items and extent may be added or deleted as work progresses or to meet the available funding for this work. Refer to Appendix A for Site Plan of the proposed project.

Auburn Ash Landfill Leachate Forcemain

This project generally consists of the installation of a pump station and cross country forcemain to discharge the landfill leachate to the wastewater collection system. The work shall consist of the following: installation of approximately 1,520 linear feet of 4" diameter forcemain and the installation of a pump station and other related work. Provide all required fittings, mechanical joint retainer glands, and other appurtenances as outlined in the plans and specifications. Provide all surface restoration, erosion control, traffic control and other work as specified or appurtenant.

BID BOND

KNOW ALL BY THESE PRESENTS, that we, the undersigned, _____as Principal, and _____ as Surety, are hereby held and firmly bound unto _____as OWNER in the penal sum of _____for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____day of _____, 2017.

The Condition of the above obligation is such that whereas the principal has submitted to _____a certain BID,

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

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for all and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

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

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

_____ (L.S)
Principal

Surety

By: _____

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

SAMPLE AGREEMENT

THIS AGREEMENT is made this ### day of Month Year, by and between the CITY OF AUBURN, a municipal corporation existing under the laws of the State of Maine and located in the County of Androscoggin, State of Maine (hereinafter "CITY"), Company Name, Address, EIN, (hereinafter "CONTRACTOR"),

WITNESSETH:
In consideration of the mutual covenants and conditions contained herein, the CITY and the CONTRACTOR agree as follows:

SPECIFICATIONS:

1. The CONTRACTOR shall furnish all of the material and perform all of the work shown on the drawings and described in the specifications entitled: Bid # XXXXX Bid Title which are attached hereto and made a part hereof, and the CONTRACTOR covenants that it shall do everything required by this Agreement, the Special Provisions of the Agreement, the Invitation to Bid and the Specifications in return for payment as provided herein.

COMPLETION DATE:

2. The work to be performed under this Agreement shall be commenced by Month day, year and fully completed on or before Month day, year.

CONTRACT PRICE:

3. The CITY shall pay the CONTRACTOR for the performance of the Agreement the sum of $XXX

PERFORMANCE BOND:

4. If required by the City, the CONTRACTOR shall furnish to the CITY at the time of the execution of this Agreement a performance bond and a labor and material payment bond each in the amount of $Dollar amount or N/A (whichever applies) executed by a surety company satisfactory to the CITY, guaranteeing the performance and payment by the CONTRACTOR. ❑ Yes, Required (Initials: ____) ❑ No, Waived (Initials ___)

GUARANTEE:

5.The CONTRACTOR shall guarantee his work against any defects in workmanship and materials for a period of one year from the date of the CITY's written acceptance of the project.

PERMITS AND LICENSES:

6. Permits and licenses necessary for the prosecution of the work shall be secured and paid by the CONTRACTOR.

CITY'S RIGHT TO TERMINATE CONTRACT:

7. If the CONTRACTOR should be adjudged a bankrupt, or if it should make a general assignment for the benefit of creditors, or if a receiver should be appointed on account of its insolvency, or if it should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if it should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, and ordinances, or otherwise be guilty of a substantial violation of any provision of the Agreement, then the CITY when sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the CONTRACTOR, and his surety, seven (7) days written notice, terminate the employment of the CONTRACTOR and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method it may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Agreement price shall exceed the expense of the finishing the work, including compensation for additional architectural, managerial and administrative services, such excess shall be paid to the CONTRACTOR. If such expense shall exceed such unpaid balance, the CONTRACTOR shall pay the difference to the CITY.

CONTRACTOR'S LIABILITY INSURANCE:

8.The CONTRACTOR shall not commence work under this Agreement until he has obtained all insurance required under this paragraph and such insurance has been approved by the CITY, nor shall the CONTRACTOR allow any subcontractor to commence work on his subcontract until all similar insurance required of subcontractor has been so obtained and approved. It is a requirement that the CITY be named as an Additional Insured on the General Liability and Automobile Liability policies. Maine Turnpike Authority shall be named as an additional insured on the General Liability and Automobile Liability policies.

Commercial General Liability to include products and completed operations, and blanket contractual. The limits of liability shall be as follows:

Bodily Injury and Property Damage	$5,000,000
Personal Injury and Advertising Injury	$5,000,000
Per Project Aggregate	$5,000,000
General Aggregate	$5,000,000
Products and Completed Operations Aggregate	$5,000,000
Medical Payments	$10,000

(b) Business Automobile Liability

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractors to maintain business automobile liability insurance covering all owned non-owned, leased, rented or hired automobiles (symbol 1). The limits of liability shall be as follows:

Bodily Injury and Property Damage	$5,000,000

Automobile physical damage coverage shall be at the option of the CONTRACTOR, all sub-contractors and lower tier contractors. The CITY shall not be liable for physical loss or damage to any owned, non-owned, leased, rented or hired automobile.

Workers' Compensation Insurance

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractors to maintain Workers' Compensation and Employers Liability in accordance with the laws and regulations of the State of Maine. The limits of liability provided shall be as follows:

Coverage A:	Statutory
Coverage B:	$100,000/$500,000/$100,000

Professional Liability

If the CONTRACTOR is an Architect, Engineer or Surveyor, they shall maintain a policy of insurance to pay on their behalf whatever amounts that may become legally required to pay on account of an error, omission or negligent act.

Limits of Liability shall be as follows:

$1,000,000 per occurrence and in the aggregate site specific.

It is a requirement that this policy be maintained for a period of three (3) years following completion of the project.

Certificates of Insurance of the types and in the amounts required shall be delivered to the CITY prior to the commencement of any work by the CONTRACTOR, subcontractor or lower tier contractor or any person or entity working at the direction or under control of the CONTRACTOR. The CONTRACTOR shall assume the obligation and responsibility to confirm insurance coverage for all sub-contractors or lower tier contractors who will participate in the project.

The Certificate of Insurance and the policies of insurance shall include a sixty (60) day notice to the CITY of cancellation, non-renewal or material change in coverage or form.

The CONTRACTOR and his surety shall indemnify and save harmless the CITY, his officers and employees from all suits, actions or claims of any character brought because of any injuries or damage received or sustained by any person, persons or property on account of the operations of the said CONTRACTOR; or on account of or in consequence of any neglect in safeguarding

the work; or through use of unacceptable materials in construction of the work; or because of any act or omission, neglect, or misconduct of said CONTRACTOR; or because of any claims or amounts recovered from any infringements or patent trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act" or of any other law, ordinance, order or decree; and so much of the money due to the said CONTRACTOR under and by virtue of his/her contract as shall be considered necessary by the CITY for such purpose, may be retained; or in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims, for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the CITY.

Waiver of Subrogation

Payment of any claim or suit including any expenses incurred in connection therewith by the CITY, or any insurance company on behalf of the CITY shall not constitute a waiver of subrogation against the CONTRACTOR, sub-contractors or any lower tier contractor in the event that such claim or suit was caused by or contributed to as a result of the negligent acts of the CONTRACTOR, any sub-contractors or lower tier contractors.

Construction Agreement

The CONTRACTOR shall and does hereby agree to indemnify, save harmless and defend the CITY from the payment of any sum or sums of money to any person whomsoever on account of claims or suits growing out of injuries to persons, including death, or damages to property, caused by the CONTRACTOR, his employees, agents or sub-contractors or in any way attributable to the performance and execution of the work herein contracted for, including (but without limiting the generality of the foregoing), all claims for service, labor performed, materials furnished, provisions and suppliers, injuries to persons or damage to property, liens, garnishments, attachments, claims, suits, costs, attorney's fees, costs of investigation and defense. It is the intention of this paragraph to hold the CONTRACTOR responsible for the payment of any and all claims, suits, or liens, of any nature character in any way attributable to or asserted against the CITY, or the CITY and the CONTRACTOR, which the City may be required to pay. In the event the liability of the CONTRACTOR shall arise by reason of the sole negligence of the CITY and/or the sole negligence of the CITY's agents, servants or employees, then and only then, the CONTRACTOR shall not be liable under the provisions of this paragraph.

DAMAGES:

9.The CONTRACTOR shall defend, indemnify and save harmless the CITY and all persons acting for or in behalf of it against all claims for injuries (including death), loss or damage, arising out of the performance out this contract.
LIENS:

10.Neither the final payment nor any part of the retained percentage shall become due until the CONTRACTOR, if required, shall deliver to the CITY a complete release of all liens arising out of the Agreement, or receipts in full in lieu thereof and, if required in either case, an affidavit that

so far as it has knowledge or information the releases and receipts include all the labor and material for which a lien could be filed; but the CONTRACTOR may, if any SUB-CONTRACTOR refuses to furnish a release or receipt in full, furnish a bond satisfactory to the CITY to indemnify it against any lien. If any lien remains unsatisfied after all payment are made, the CONTRACTOR shall refund to the CITY all moneys that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

ASSIGNMENT:

11. Neither party to the Agreement shall assign the Agreement or sublet it as a whole without the written consent of the other, nor shall the CONTRACTOR assign any moneys due or to become due to it hereunder, without the previous written consent of the CITY.

SUBCONTRACTS:

12. The CONTRACTOR shall not sublet any part of this Agreement without the written permission of the CITY. The CONTRACTOR agrees that it is as fully responsible to the CITY for the acts and omissions of its SUB-CONTRACTORS and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

USE OF PREMISES:

13.The CONTRACTOR shall confine its apparatus, the storage of materials and operations of its workers to limits indicated by law, ordinance and permits and shall not otherwise unreasonably encumber the premises with its materials. If any part of the project is completed and ready for use, the CITY may, by written and mutual consent, without prejudice to any of its rights or the rights of the CONTRACTOR, enter in and make use of such completed parts of the project. Such use or occupancy shall in no case be construed as an acceptance of any work or materials.

CLEANING UP:

14. The CONTRACTOR shall at all times keep the premises free from accumulation of waste materials or rubbish caused by its employees or work, and at the completion of the work it shall remove all its rubbish from and about the project, and all its tools, scaffolding and surplus materials and shall leave its work "broom-clean" or its equivalent, unless more exactly specified. In case of dispute, the CITY may remove the rubbish and charge the cost to the CONTRACTOR.

PAYMENTS:

15. Unless otherwise agreed to, the CITY shall make payments on account of the Agreement as follows:

Within 30 days, as invoices are submitted for work completed to the satisfaction of the CITY.

IN WITNESS, WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

BY: _____ BY: _____
Witness Finance Director

BY: _____ BY: _____
Witness Contractor

SPECIAL PROVISIONS

The following Supplemental Specifications and Special Provisions shall amend the "Maine, Department of Transportation Standard Specifications, **November 2014 Edition**" including any and all applicable revisions and special provisions. In case of conflicts, these Supplemental Specifications (1) and Special Provisions (2) shall take precedence and shall govern.

(1) Supplemental Specifications - modifications, additions and deletions to the existing Standard Specifications.

(2) Special Provisions - specifications in the contract which are for additional items not covered in the Standard Specifications

F-1 Work Hours

No work shall proceed on this project prior to the hour of 7:00 AM or after 7:00 PM (prevailing time) on any working day unless the City has granted prior approval. The definition of work for this specification shall include starting or moving of equipment, machinery, or materials. Any day worked for four hours or more will be considered a full working day.

F-2 Notification of Residents

Residents shall be notified sufficiently in advance of any construction affecting the driveway to allow adequate time for their removal of personal vehicles. Locations of cuts for drive access affecting individual residents shall be brought to their attention.

F-3 Traffic Signs

All existing traffic signs, which are to be removed during construction, shall be dismounted and the posts removed and shall be stacked in an area approved by the Engineer. Contractor shall protect the signs from damage while in his possession and shall repair, at no additional cost to the City, any damages caused by his operations.

Stop signs are to be maintained at their original locations at all times during the progress work.

Prior to the start of any construction work, the Contractor shall prepare an acceptable inventory of all signs within the project limits which shall be used as a guide for replacement should signs be removed for construction purposes.

This work shall be considered as subsidiary obligation of the contract for which no special payment will be made.

F-4 Protection of Trees

The Contractor shall be responsible for the preservation of all trees on the project, which are not to be removed. Any trees damaged by the Contractor's operations shall be repaired as approved by tree dressing or paint in accordance with the appropriate provisions of Section 201 of Standard Specifications.

F-5 Maintenance and Protection of Traffic

The Contractor shall be responsible for the maintenance and protection of all vehicular and pedestrian traffic at all times during construction and shall erect suitable warning signs, flashing barriers or temporary lighting devices of sufficient size and number to afford protection to the traveling public in accordance with the most recent edition of "Manual on Uniform Traffic Control Devices for Streets Highways" published by the Department of Transportation of the Federal Highway Administration.

The Contractor shall be held responsible for all damage to the work due to any failure of the warning devices to properly protect the work from the traffic, pedestrians or other causes. Traffic control shall be in accordance with the City of Auburn's Traffic Detail Policy effective April 1, 2006.

F-5A Materials

Materials shall meet the requirements specified for the various subsections of the Specifications. Equals shall be approved only prior to the bid opening.

F-6 Survey

The City of Auburn, Department of Public Services will establish, at their discretion, a benchmark location and one construction baseline. The Contractor shall be responsible for maintaining these controls during construction and providing all additional survey required, which shall be done by a competent Engineer or Surveyor.

F-7 Waste Areas

The disposal of waste and surplus material and slash from tree cutting shall be as outlined in Section 203.06 - Waste Areas of the Supplemental Specifications.

F-8 Occupational Safety and Health

The Contractor is hereby advised that all work to be furnished to the City shall be performed with equipment, methods, and use of personnel in conformance with the pertinent Occupational Safety and Health Act requirements of the State of Maine and with the regulations for construction as specified by the Department of Labor and Occupational Safety and Health Administration (OSHA) as currently amended.

F-9 Pre-Construction Conference

A conference will be held at 60 Court Street, Auburn, Maine within ten (10) days after the awarding of the contract. At this time, the contractor will be required to submit a graphically illustrated schedule and a plan showing project activities. City officials and representatives of the various utility companies involved in the project will be present at this meeting.

It is the purpose of this meeting to inform the various agencies of the proposed work schedule, and to give them the opportunity of discussing any difficulties and of offering suggestions to the Contractor concerning his proposed schedule in order that full cooperation may be reached.

F-10 Schedule of Operations

The above-mentioned schedule of operations in Section F-10 shall consist of a bar chart detailing the activities included in the contract. Although a bar chart is acceptable as a minimum, more complex and detailed schedules (i.e., flow charts, critical paths, etc.) are encouraged and will be accepted by the City. Updates will be required.

F-11 Traffic Officers

Traffic control shall be the responsibility of the Contractor and as directed. Traffic control officers will be employed by the contractor. City of Auburn police officers may be required in certain traffic situations but not anticipated in this contract.

F-12 Limitation of Operations

The Contractor shall conduct the work at all times in such a manner and in such sequence, as will assure the least interference with traffic. The Contractor shall not open up work to the prejudice or detriment of work already started. The Engineer may require the Contractor to finish a section on which work is in progress before work is started on any additional sections, if finishing such section is essential to public convenience.

Waste and surplus material shall not be stockpiled, but shall be disposed of in areas as designated in Section 203.06, Waste Areas, of the Supplemental Specifications.

F-13 Questions Regarding Plans and Documents

Questions from prospective bidders relative to this Contract shall be submitted no later than the date indicated in the advertisement and shall be directed to:

Kristopher Bennett
Project Engineer
City of Auburn
(207) 333-6601, Ext 1134

F-14 Record Drawings

The Contractor shall keep daily records of all changes in the work and records of underground infrastructure. Upon completion of the project, the Contractor shall deliver to the Engineer copies of daily records. Final payment will not be made until Engineer receives copies of daily records.

F-15 Waste Material

All waste material shall be removed from the site and the area left clean upon completion of work. Any equipment or structures damaged by the Contractor shall be repaired or replaced at no additional cost to the City.

F-16 Quality Assurance

The Contractor shall be responsible at all times for maintaining top quality assurance during performance of his work.

F-17 Bids

No bids shall be withdrawn within a period of sixty -(60)- days after the opening of the bids.

F-18 Aggregate Base and Subbase Courses

All gravel products shall meet MDOT specifications and shall also be produced from quarry rock.

F-19 Tree Removal

First refusal of wood from tree removal shall be given to the property owner.

F-20 Sawcut Joints

Joints created by sawcutting shall be protected prior to paving. Damaged joints will be cut back at no additional cost to the City.

F- 23 Change Orders

Changes in the scope of work will be approved by the Project Engineer and adjusted by Change Orders.

SUPPLEMENTAL SPECIFICATIONS
SECTION 100 - GENERAL PROVISIONS

1. SCOPE

The work covered by this section includes furnishing all labor, equipment, materials, incidentals, and the performing of all operations in connection with the work encompassed by these contract documents. All work shall be subject to the terms and conditions of the contract documents.

2. STANDARD SPECIFICATIONS

The City of Auburn, Maine has adopted for this project, the "State of Maine, Department of Transportation, Standard Specifications, **November 2014 Edition**", and the Standard Details (December 2002) and the following Supplemental Specifications including all current additions or modifications thereof. In the case of conflict with the following Supplemental Specifications, addenda shall take precedence and shall govern.

Wherever in the Specifications and in this Contract the term "Department", "the Department of Transportation", "MDOT", or any reference to the "State of Maine, Department of Transportation" or its "Engineers" is mentioned, the intent and meaning shall be interpreted to refer to the CITY OF AUBURN, MAINE, or their authorized representative.

WAIVER OF LIEN

State of Maine
County of _____, ss. _____, 20__.

TO ALL WHOM IT MAY CONCERN:

The undersigned, _____, has been employed by _____ to furnish for the building owned by _____ and located at ; and

The undersigned, in consideration of the sum of Dollars ($_____), the receipt whereof is hereby acknowledged, does hereby waive and release any and all liens, right of lien, or claim of whatsoever kind or character on said described building and premises, on account of any and all labor or material, or both, furnished for or incorporated into said building by the undersigned, up to and including _____, 20__.

The undersigned further certifies that the payment made for the execution of this waiver is given and accepted as absolute payment, and not as conditional or part payment, or as security for payment.

Signed and delivered as a sealed instrument this _____ day of _____, 20__.

_____

(Sub) Contractor

By _____(Legal Seal)
Its

CERTIFICATE OF FINAL PAYMENT

The undersigned further certifies that all work to be performed by the undersigned at the above premises, including any changes and additions, has been completed, and there is no remaining work to be done by the undersigned at that location under the agreement for the work. The payment received herewith constitutes final payment in full for all work done by the undersigned on the described premises, and the above lien waiver covers all of the labor and materials contracted for by the undersigned.

_____

(Sub) Contractor

By _____(Legal Seal)
Its

Dated:_____, 20__.

SUPPLEMENTAL SPECIFICATIONS
SECTION 202 – SITE WORK

DESCRIPTION

A. Remove surface debris.

B. Remove paving, curb, structures and pipes.

C. Clear site of plant life and grass.

D. Remove trees and shrubs.

E. Remove root system of trees and shrubs.

F. Topsoil Excavation.

REGULATORY REQUIREMENTS

A. Conform to applicable code for disposal of debris.

B. Contractor is required to contact Dig Safe prior to construction.

C. Coordinate clearing Work with local utility companies.

PREPARATION

A. Verify that existing plant life designated to remain is tagged or identified.

B. Install silt fencing and erosion controls before starting clearing.

C. Coordinate clearing work with Owner.

PROTECTION

A. Locate, identify, and protect utilities that are to remain, from damage.

B. Protect trees, plant growth, and features designated to remain, as final landscaping.

C. Protect bench marks and existing structures from damage or displacement.

CLEARING

A. Remove paving where applicable.

B. Remove trees and shrubs within marked areas. Remove stumps, main root ball, root system and surface rock to depth limitation on plans.

C. Clear undergrowth and deadwood using proper methodology to minimize the mixing of topsoil.

D. Clear areas required for access to site and execution of work.

REMOVAL

A. Any debris, rock, and extracted plant life must be removed off site and disposed of at an approved location.

B. Remove the existing pipe, structures and other site features as indicated on the Contract Drawings and disposed of at an approved location. The Owner shall have first right and refusal of the equipment and materials associated with the site features.
   1. Contractor to fill all abandoned pipes with flowable fill. Contractor to ensure that entire run of abandoned pipe is filled with flowable fill.

METHOD OF MEASUREMENT

Site Preparation shall be considered a lump sum item as accepted in accordance with the Contract Documents.

BASIS OF PAYMENT

Payment for Site Work shall be made at the contract price. Site Work shall include the removal and disposal of brush, tree and stump, grubbing, stripping of topsoil, pavement, curbing, structures, pipes, other site features and all other preparations necessary for the installation of the pump station, force main and appurtenances, or as directed by the Engineer. Site Work shall include constructing the proposed rip rap spillway for the existing leachate lagoon as shown on the drawings. Site Work shall include the temporary piping as necessary to bypass the structure during construction and furnishing and installation of flowable fill in all abandoned pipes. Construction of the spillway in the existing leachate lagoon shall be considered incidental to Site Work and shall include all labor, materials and equipment to perform the work. Restoring surface conditions and temporary and final seeding and mulching of all disturbed areas shall be incidental to the Site Work. Site Work shall include performing a pre-construction video of the project area and providing a cop to the Owner and Engineer. This shall include all labor, materials, and equipment as required to satisfactorily complete the site preparation.

Payment will be made under:

Pay Item	Pay Units
202.40 Site Work	Lump Sum

SUPPLEMENTAL SPECIFICATIONS
SECTION 653 – BOARD INSULATION

DESCRIPTION

A. Installation of trench insulation.

SUBMITTALS

A. Product Data: Provide data on product characteristics, performance criteria and limitations.

B. Manufacturer's Installation Instructions: Indicate special environmental conditions required for installation and installation techniques.

ENVIRONMENTAL REQUIREMENTS

A. Do not install insulation adhesives when temperatures or weather conditions are detrimental to successful installation.

INSULATION MATERIALS

A. Polystyrene Perimeter Board Insulation: ASTM C578 Type VI extruded cellular type, conforming to the following:

Thermal Resistance:	10
Thickness:	Thickness 2 inches
Board Size:	4 feet wide by 8 feet long
Compressive Strength:	Minimum 30 psi
Water Absorption:	In accordance with ANSI/ASTM D2842 0.3 percent by volume maximum
Edges:	Shiplap

ADHESIVES

A. Adhesive: Type recommended by insulation manufacturer for application.

ACCESSORIES

A. Tape: Self-adhering tape, mesh reinforced 2 inches wide.

EXAMINATION

A. Verify that substrate, adjacent materials, and insulation boards are dry and ready to receive insulation.

INSTALLATION - TRENCH INSULATION

A. Insulate all pipe installation with less than 6 feet of cover to obtain the equivalent of 6 feet of cover, or as directed by the Resident Inspector. For determination of required thickness of insulation, two inch of insulation is considered equivalent to one and a half feet of soil cover.

B. Install per manufacturer instructions and in accordance to detail on Contract Drawings.

C. Install horizontal insulation on top of minimum three-inch layer of compacted select bedding material above top of pipe.

D. Backfill by hand for first 6-8 inches over insulation and compact prior to placing remaining backfill.

E. Install each type of insulation in accordance with manufacturers' recommendations.

F. Rigid insulation shall be clean, dry and free of any material which can dissolve plastic, such as asphalt.

SCHEDULE

A. Force Main:
   1. Two feet wide for pipes smaller than six inches in diameter, or as directed by the Resident Project Representative.
   2. Four feet wide for pipes six inches in diameter and greater, or as directed by the Resident Project Representative.

BASIS OF PAYMENT

A. Payment for board insulation shall be incidental to Pay Item 801.092 4-Inch Diameter Force Main.

SUPPLEMENTAL SPECIFICATIONS
SECTION 655 – OVERHEAD ELECTRIC EXTENSION

DESCRIPTION

A. Extension of the existing overhead electric to service the propose pump station and including the electrical service, feed and connection to the pump station.

BASIS OF PAYMENT

A. Overhead Electric Extension to Pump Station shall be measured and paid for by invoices furnished by the electrical service utility. An allowance has been determined for this project. The allowance shall be for the design and installation of the electrical service, include furnishing and installing utility poles, furnishing and installing overhead electric wires, furnishing and installing transformers, furnishing and installing the meter and all other operations as may be necessary, including furnishing and installing all fittings as may be required to complete the electrical service and all other operations as may be required by Central Maine Power Company and State Electrical Codes to complete the item as shown on the Contract Drawings and in accordance with Contract Specifications. Should the final cost, as determined through furnished invoices, vary upward or downward from the stated allowance, an adjustment will be made accordingly.

SUPPLEMENTAL SPECIFICATIONS
SECTION 801 – UTILITY HORIZONTAL DIRECTIONAL DRILLING

SUMMARY OF WORK

A. Section Includes:
   1. Excavation for approach trenches and pits.
   2. Horizontal directional drilling.
   3. Pipe.
   4. Drilling fluid system.

REFERENCE STANDARDS AND DOCUMENTS

A. ASTM International:
   1. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter.
   2. ASTM D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products.
   3. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
   4. ASTM D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
   5. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
   6. ASTM F714 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter.
   7. ASTM F1962 - Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings.

B. American Water Works Association:
   1. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   2. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.
   3. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.
   4. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission.

C. National Utility Contractors Association:
   1. NUCA - Horizontal Directional Drilling Good Practices Guidelines.

D. Plastics Pipe Institute:
   1. PPI TR-46 - Guidelines for Use of Mini-Horizontal Directional Drilling for Placement of High Density Polyethylene Pipe.

COORDINATION

A. Contractor shall coordinate work of this section with the Owner, Engineer and Maine Turnpike Authority.
B. Contractor shall coordinate the areas for staging and storage of materials and equipment with the Owner, Engineer, and Maine Turnpike Authority.
   1. Contractor shall use only those designated areas of the Site for staging and storage.

PRE-INSTALLATION MEETINGS

A. Convene a pre-installation meeting onsite, with the Owner, Engineer, and Maine Turnpike Authority a minimum one week prior to commencing Work of this Section.

SUBMITTALS

A. Prior to commencement of the work, submit the following to the Owner and Engineer for review and approval.

B. Product Data:
   1. Identify source of water used for drilling.
      a. Submit copy of approvals and permits for use of water source.
   2. Pipe.
   3. Grout Mixture.
   4. Drilling Fluid Mixture and Additives.
      a. Drilling Fluid Material Safety Data Sheet.

C. Shop Drawings:
   1. Submit technical data for equipment, method of installation, waste containment plan and proposed sequence of construction.
   2. Include information pertaining to pits, dewatering, method of spoils removal, equipment size, capacity, and capabilities, including installing pipe on radius, type of drill bit, drilling fluid, flushing of drilling fluid, method of monitoring line and grade, detection of surface movement, name plate data for drilling equipment, and mobile spoils removal unit.
   3. Submit calculations regarding pull strength of pipe.

D. Qualifications Statement:
   1. Submit statement of Qualifications and Records.

E. Baseline Video and Photos of Site and Structures
   1. Contractor shall record baseline video and take photos of the Site and structures prior to commencing work. This includes pre-construction as well as construction progress and post construction documentation of all work areas.

CLOSEOUT SUBMITTALS

A. Project Record Documents: Submit an electronic copy and three hard copies of the As-built drawings to the Engineer within 15 days after completing the horizontal directional drilling. Include in the as-built drawings a plan, profile, and all information recorded during the progress of the work. Clearly tie the as-built drawings to the project's survey control. As-built Drawings to include the following:
   1. Record actual locations of pipe and invert elevations.
   2. Identify and describe unexpected variations to subsoil conditions.
   3. Complete drill logs with recordings of actual vertical and horizontal location of pipe at 10-foot intervals.
   4. Show depth and location of abandoned bores.

QUALITY CONTROL

A. Perform Work in accordance to the following:
   1. NUCA HDD Good Practices Guidelines.
   2. ASTM F1962.
   3. PPI TR-46.

QUALIFICATIONS

A. Driller: Company specializing in performing Work of this Section with minimum three years' documented experience.

DELIVERY, STORAGE, AND HANDLING

A. Requirements for transporting, handling, storing, and protecting products shall be per the manufacturers' recommendations.

B. Provide temporary end caps and closures on piping and fittings until pipe is installed.

C. Protect pipe from entry of foreign materials and water by installing temporary covers, completing sections of Work, and isolating parts of completed system.

D. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage. All materials found during inspection or during the progress of work to have cracks, flaws, surface abrasions, or other defects will be rejected. Remove defective materials from the job site.

E. The Contractor shall assume full responsibility for the protection and safe keeping of products and equipment under this Contract that are stored on-site.

EXISTING CONDITIONS

A. Field Measurements:
   1. Verify field measurements prior to fabrication.
   2. Indicate field measurements on Shop Drawings.

HORIZONTAL DIRECTIONAL DRILLING

A. Performance and Design Criteria:
   1. Drilling Steering System: Remote with continuous electronic monitoring of boring depth and location.
   2. Directional Change Capability: 90 degrees with 35-foot radius curve.
   3. Drill Rod: Select the appropriate drill rod to be used. Submit certified statement that the drill rod has been inspected and is in satisfactory condition for its intended use.
   4. Ratio of Reaming Diameter to Pipe Outside Diameter:
      a. Nominal Pipe Diameter of 6-inches and Smaller: Maximum of 1.5.
      b. Nominal Pipe Diameter Larger than 6-inches: Submit recommended ratio and reaming procedures for review.

WATER SOURCE

A. Water: Non-potable, obtained from approved source.

MATERIALS

A. Drilling Fluid:
   1. Use only a high quality biodegradable polymer drilling fluid to ensure hole stability, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the product pipe.
   2. Use only fluid with a composition which complies with all Federal, State, and local environmental regulations.
   3. Mix the bentonite drilling fluid with non-potable water (of proper pH) to ensure no contamination is introduced into the soil during the drilling, reaming, or pipe installation process. The Contractor is responsible for any required pH adjustments.
   4. Collect drilling fluid returns in the entrance pit or spoils recovery pit. Immediately clean up any drilling fluid spills or overflows from these pits.
   5. Disposal of fluids is the responsibility of the Contractor. Dispose of fluids in a manner that is compliant with all permits and applicable Federal, State, and local regulations.

B. Fine Aggregate Grout
   1. Fine aggregate grout shall consist of a mixture of Portland cement, fine aggregate, and water so proportioned and mixed as to provide a readily flowable grout. Admixtures and/or a pozzolan may be used with the approval of the Engineer. The hardened fine aggregate concrete shall exhibit a compressive strength of 2,500 psi (17 MPa) at 28 days.

C. Ductile Iron Piping:
   1. Pipe: Comply with ANSI/AWWA C150/A21.50.
   2. 4-inch diameter pressure class 350.
   3. American Flex-Ring Restrained Joint Ductile Iron pipe, or approved equal.

4. Joints: Flex-Ring joint pipe with its positive, flexible joint restraint for use in trenchless applications such as horizontal directional drilling.
5. Pipe shall be furnished with standard asphaltic coating outside and cement lined in accordance with ANSI/AWWA C104/A21.4.

EXAMINATION

A. Verify that sizes, locations, and invert elevations are in accordance to the Drawings.

PREPARATION

A. Identify required lines, levels, contours, and data locations.

B. Protect waste rock berm as necessary from rock slides.

INSTALLATION

A. Drill Set-Up
   1. Ensure horizontal drill path alignment is located and clearly marked prior to start of drilling.
   2. Ensure final placement of drill on drill pad allows for achieving the specified entrance point location, elevation, and angle of each bore.
   3. Ensure that the drill set-up layout including support equipment, staging and drilling fluid storage areas allows for safe and efficient execution of the required drilling operations.

B. Excavation
   1. Excavate approach trenches and pits per Shop Drawings and as Site conditions require; minimize number of access pits.
   2. Provide a drill entrance pit as required for drilling fluid storage. Maintain at minimum size to allow only the minimum amount of drilling fluid storage prior to transfer to mud recycling or processing system or removal from the site.
   3. Do not allow drilling mud to flow freely on the site or around the entrance pits. Remove spilled mud and restore ground to original condition.

C. Dewatering:
   1. Intercept and divert surface drainage, precipitation, and groundwater away from excavation using dikes, curb walls, ditches, pipes, sumps, or other approved means.
   2. Develop and maintain substantially dry subgrade during drilling and pipe installation.

D. Drilling:
   1. The type and size of the well bore or pilot string cutting head and the diameter of the drill pipe is at the Contractor's discretion.

2. Drill pilot bore with vertical and horizontal alignment as indicated on Drawings, according to the following tolerances.
    a. Entry Point Location: Make pilot hole entry point within plus/minus 12-inches of the location shown on the drawings or as directed by the Owner and Engineer in the field.
    b. Vertical Tolerance: Plus/minus 2-inches from the elevation shown.
    c. Horizontal Tolerance: Plus/minus 12-inches from the alignment path.
3. Survey entire drill path and mark entry and exit locations with stakes.
    a. No monitoring shall be allowed in an active traffic lane.
4. Guide drill remotely from ground surface to maintain alignment by monitoring signals transmitted from drill bit.
    a. Monitor depth, pitch, and position.
    b. Adjust drill head orientation to maintain correct alignment.
    c. No monitoring shall be allowed in an active traffic lane.
5. Guidance systems shall be used in sufficient numbers and frequency of measurement during advancement of each boring to decide as to whether the boring will meet the above tolerances. Such systems may include walkover, gyro, Parjary or a magnetic survey tool locator installed behind the pilot string cutting head and an electric grid (tru-tracker) system.
6. Inject drilling fluid into bore to stabilize hole, remove cuttings, and lubricate drill bit and pipe.
7. Continuously monitor drilling fluid pumping rate, pressure, viscosity, and density while drilling pilot bore, back reaming, and installing pipe to ensure adequate removal of soil cuttings and stabilization of bore.
    a. Provide relief holes when required to relieve excess pressure.
    b. Minimize heaving during pullback.
8. After completing pilot bore, remove drill bit.

E. Drilling Obstructions:
1. If obstructions are encountered during drilling, notify Engineer immediately. Do not proceed around obstruction without Engineer’s approval.
2. For conditions requiring more than 2-feet of deviation in horizontal alignment, submit revised Shop Drawings to the Engineer for approval before resuming Work.

F. Pipe:
1. Install reamer and pipe pulling head; select reamer with minimum bore diameter required for pipe installation.
    a. Conduct reaming operations at the Contractor's discretion. Determine the type of back reamer to be utilized by the type of subsurface soil conditions that are encountered during the pilot hole drilling operation.
2. Attach pipe to pipe pulling head and pull reamer and pipe to entry pit along pilot bore.
3. Inject drilling fluid through reamer to stabilize bore and lubricate pipe.

4. Install piping with horizontal and vertical alignment as shown on Drawings.
5. Protect and support pipe being pulled into bore such that pipe moves freely and is not damaged during installation.
6. Do not exceed pipe manufacturer's recommended pullback forces.
7. Provide sufficient length of pipe to extend past termination point to allow connection to other pipe sections.
8. Allow minimum of 24 hours for stabilization after installing pipe before making connections to pipe.

G. Slurry Removal and Disposal:
   1. Contain excess drilling fluids at entry and exit points until recycled or removed from Site; provide recovery system to remove drilling spoils from access pits.
   2. Drilling Spoils:
      a. Remove, transport, and dispose of drilling spoils.
      b. Do not discharge drilling spoils in sanitary sewers, storm sewers, or other drainage systems.
      c. If drilling fluid leaks to surface, immediately contain leak and barricade area from vehicular and pedestrian travel before resuming drilling operations.
      d. Complete cleanup of drilling fluid at end of each working day.

TOLERANCES

A. Maximum Variation from Horizontal Position: Plus/minus 12-inches from the alignment path.

B. Maximum Variation from Vertical Elevation: Plus/minus 2-inches from the elevation shown.

FIELD QUALITY CONTROL

A. Maintain drilling logs that accurately provide drill bit location (both horizontally and vertically) at least every 10 feet along the drill path. In addition, keep logs that record, as a minimum the following, every 15 minutes throughout each drill pass, back ream pass, or pipe installation pass:
   1. Drilling Fluid Pressure;
   2. Drilling Fluid Flow Rate;
   3. Drill Thrust Pressure;
   4. Drill Pullback Pressure; and
   5. Drill Head Torque.

B. Make all instrumentation, readings, and logs available to the Engineer at all times during operation.

C. Certify that equipment for drilling has been properly set up and is ready for drilling.

CLEANING

A. Upon completion of drilling and pipe installation, remove drilling spoils, debris, and unacceptable material from approach trenches and pits. Clean up slurry from ground and return the surface area to its original condition. Dispose of all drilling fluids, soils, and separated materials in compliance with Federal, State, and local environmental regulations.

B. Remove temporary facilities for drilling operations.

BASIS OF PAYMENT

Payment for Utility Horizontal Directional Drilling shall be incidental to Pay Item 801.092 4-Inch Diameter Force Main.

SUPPLEMENTAL SPECIFICATIONS
SECTION 801 – UTILITY SEWERAGE FORCE MAINS

DESCRIPTION

A. Forcemain Piping.

B. Fittings.

C. Testing.

REFERENCES

A. ANSI/ASTM D3034 - Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

B. ANSI A3212 - Joints for Drain and Sewer Pipes using Flexible Elastomeric Seals.

C. ASTM D1784-90: Specification for rigid poly vinyl chloride (PVC) compounds and chlorinated poly vinyl chloride (CPVC) compounds.

D. ASTM 1869: Specification for rubber rings for asbestos-cement pipe.

E. ASTM 3035, Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter

F. ASTM 3350, Standard Specification for Polyethylene Plastic Pipe and Fitting Materials

SUBMITTALS

A. Submit
   1. Product data for pipe, pipe accessories including documentation that products comply with specification requirements.
   2. Manufacturer's recommendations and instructions for installation.

PROJECT RECORD DOCUMENTS

A. Submit
   1. Documents for requirements of Contract closeout, including but not limited to, warranties, testing, adjusting, spare parts, etc.
   2. Accurately record location of pipe runs, connections, manholes, and invert elevations.
   3. Field measurements for locating ends of unconnected service laterals.
   4. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging.

B. Store materials to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

MANUFACTURERS

A. JM Eagle, Inc., Extrusion Technologies, Inc., or approved equal.

B. Substitutions: In accordance with Contract Documents

FORCEMAIN PIPE MATERIALS

A. High Density Polyethylene (HDPE) Pipe, Conforming to ASTM 3035 and 3350.
   1. Class: PE 3408. PE 345434C
   2. SDR 11
   3. Nominal Size: 4 inch IPS
   4. Joints: Butt fusion weld or Electrofusion coupling

PIPE ACCESSORIES

A. Fittings: Same material as pipe, molded or formed to suit pipe size and end design, in wyes, bends, elbows, cleanouts, reducers, traps, and other configurations required.

B. Forcemain Valves
   1. Gate Valve
      a. Valves 2"-12" shall be resilient wedge type rates for 250 psig cold water working pressure.
      b. End Connections: Mechanical joint (MJ) conforming to AWWA C5091.
      c. Dual O-ring seals and bronze stem, exceeding C500 requirements.
      d. Ductile Iron Body.
      e. Epoxy coated internal and external surfaces.
      f. Wedge shall be ductile iron or bronze encapsulated with EPDM rubber.
      g. Size: As indicated on Contract Drawings.
      h. Operation: Counter-Clockwise opening.
         i) 2" Square operating nut with Non-Rising Stem.
      i. Gate Valves shall be American Flow Control Series 2500, or approved equal.
   2. Air/Vacuum Release Valve
      a. Valves shall be Valmatic Air/Vacuum Release or Combination valves, or approved equal.
      b. Valves to be provided flushing hose and connections.
      c. All air/vacuum release/combination valve piping and fittings to be sch. 40 316 SS.

d. Each air/vacuum release/combination valve shall have an isolation valve. Isolation valves shall be Watts Series S-FBV-1, 2 piece, full port, stainless steel ball valves, or approved equal.
e. All air/vacuum release and combination valves shall be installed and supported per manufacturer's recommendation.
f. Size: As indicated on Contract Drawings.
g. Model: As indicated on Contract Drawings.

B. Couplings
1. Connection between HDD 4-inch diameter pressure class 350 ductile iron pipe and 4-inch diameter SDR 11 HDPE shall be done using ductile iron restraining gland and solid sleeve coupling and an HDPE mechanical joint adapter.

EXAMINATION

A. Verify that trench cut is ready to receive work, and excavations, locations, dimensions, and elevations are as indicated on Drawings.

B. Excavate test pits as necessary to verify locations and grades of existing utilities.

C. Beginning of installation means acceptance of existing conditions.

PREPARATION

A. Hand trim excavations to required elevations. Correct over-excavation with ¾-inch crushed stone.

B. Remove large stones or other hard matter which could damage pipes or impede consistent bedding, backfilling or compaction.

FORCEMAIN PIPE INSTALLATION

A. Install pipes, fittings and accessories according to manufacturer's instructions.

B. Place pipe on minimum 6-inch deep bedding.

C. Lay pipe to alignment, slope gradient and elevations noted on Drawings.

D. Joints and joint material conforming to manufacturer's recommendation.

E. Lay pipe without break, upgrade from structure to structure with bell end upstream.

F. Install bedding at bottom sides and over top of pipe, at depths shown on Drawings.

G. Manually "chink" bedding around pipe haunches for lateral support.
1. Do not mechanically compact crushed stone over flexible pipe.

H. Install and bed pipe up to spring line; do not cover pipe without the presence of the Resident Project Representative (RPR).
   1. Work backfilled without presence of RPR shall be uncovered at Contractor's expense.

I. Place bedding material over pipe as indicated on drawings.

J. Backfill and secure each pipe length prior to installing next length.

K. Continue backfill placement to finish grade level as per Section 31 23 23.
   1. Place material in maximum 12-inch lifts, compact per Section 31 23 23.
   2. Increase compaction of each successive lift per Section 31 23 23.
   3. Do not displace or damage pipe during compaction.

L. Protect pipes against impact shocks and free falls.
   1. Remove and replace damaged pipe.
   2. Place and tamper sufficient bedding material over and around pipe to prevent damage and movement.

M. Install a water tight plug in open pipe ends when pipe laying not in progress.

N. Do not use pipe as trench drain.

FIELD QUALITY CONTROL

A. Examine pipes for defects, weak structural components, and deviations allowable tolerances.

B. Remove rejected materials from job site.

C. Obtain Engineer certification and installation conformance to specifications prior to backfilling.

D. Install pipe to lines and grades shown on Contract Drawings.

E. Allowable Tolerances.
   1. Pipe elevation: plus or minus 0.02 feet/100 feet.
   2. Horizontal layout: plus or minus 0.03 feet/100 feet.

FORCEMAIN PIPE TESTING

A. Provide all labor, equipment, material, gauges, pumps, etc., to test for leaks in accordance with AWWA Standard C600 and C906 as follows:
   1. Test newly laid pipe and valved sections at hydrostatic pressure of at least 1.5 times working pressure at test location.
      a. Test pressure: Not less than 1.25 times working pressure at highest point along line.

b. Test pressure: Not to exceed pipe or thrust restraint design pressures.
c. Test duration: 2 hours, minimum.
d. Pressure variation tolerance: less than +5 psi.
e. Test pressure not to exceed valve or fitting pressure ratings.

2. Pressurization of Pipe
   a. Fill each valved pipe section slowly with water at specified test pressure.
   b. Apply by means of pump or other approved method.
3. Air Removal
   a. Expel all air from pipe, valves, and hydrants before applying test pressure.
   b. Install corporation stops at high point to vent air if no release valves available.
   c. After air removal close stops and apply test pressure.
   d. After test, remove stops and plug holes or leave stops in place permanently if directed by Engineer. Test water to be removed from site and not allowed to remain in trench or on site or cause erosion.
4. Examination
   a. Examine exposed pipe, fittings, valves, hydrants, and joints during test.
   b. Repair or replace defective appurtenances discovered during test.
5. Leakage Test
   a. Leakage: Quantity of water supplied to pipe test section to maintain pressure within +5 psi.
   b. Leakage shall not exceed the following limits:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

L = allowable leakage, in gallons per hour (gph)
S = length of pipe tested in feet
D = nominal pipe diameter, in inches
P = average pressure during test, in pounds per square inch (gauge)

   c. When testing against closed Metal-seated valves, an additional leakage per closed valve of 0.0078 gph/inch of nominal valve size shall be allowed.
   d. Repair visible leaks regardless of leakage amount.
   e. If failing leakage tests:
      1. Locate and correct leak.
      2. Repeat leakage test until passing test attained.

METHOD OF MEASUREMENT

Pipe measured for payment shall be the number of linear feet of the 4-Inch Diameter Force Main as measured by the Engineer horizontally along the centerline of the pipe including fittings, installed and accepted in accordance with the Contract Documents.

BASIS OF PAYMENT

Payment for 4-Inch Diameter Force Main pipe shall be at the contract unit price. The contract unit price per linear foot of pipe shall be full compensation for all labor, materials, and equipment required to satisfactorily complete the force main either by trenching or by horizontal directional drilling. Satisfactory completion shall include: cutting and removing pavement or topsoil, as required; excavating the trench; dewatering the trench; sheeting and

bracing; furnishing and installing the pipe; furnishing and installing the cleanout; furnishing and installing the gate valves and valve boxes; furnishing and installing the fittings; furnishing and installing thrust blocks; furnishing and installing marker tape and tracer wire; providing and compaction of the specified bedding; backfilling the trench; compacting the trench; maintaining the trench; disposal of surplus materials; testing; and, all other operations as may be necessary, including furnishing and installing all fittings as may be required to satisfactory complete the item as shown on the Contract Drawings and in accordance with Contract Specifications. This item shall include horizontal directional drilling of the force main and shall include directional drilling; furnishing and installing the pipe; excavation of the drilling and receiving pits; furnishing, installing and disposal of the drilling fluid; furnishing and installing grout; disposal of drilling spoils; reaming; maintaining drilling logs; testing; and all other accessories and horizontal directional drilling operations materials, equipment and labor as may be necessary to satisfactory complete the bid item as shown on the Contract Drawings and in accordance with Contract Specifications.

Maintaining and repairing damage to any public or private utility encountered including water, drainage, sanitary, services and pipes shall be considered incidental to the item, regardless if pipes are shown on the drawings with the exception of direct on-grade conflicts.

Payment for this work on interim requisitions shall be according to the following percentages:

a. Pipe acceptably set in place and backfilled - 80 percent.
b. Pipe successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted – 10 percent.
d. All payments shall be subject to pertinent retainage

Payment will be made under:

Pay Item	Pay Units
801.092 4-Inch Diameter Force Main	Linear Feet

SUPPLEMENTAL SPECIFICATIONS
SECTION 802 – PUMP STATION, VALVE PIT AND MANHOLES

DESCRIPTION

A. Manholes and Pump Station precast concrete sections.

B. Frames and Cover.

C. Joint Sealants.

D. Testing.

REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM).
   1. ASTM A48-83 - Specification for Gray Iron Castings.
   2. ASTM C478-84 - Precast Reinforced Concrete Manhole Sections.
   3. ASTM C923-84 - Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes.

SUBMITTALS

A. Manufacturer's Literature: Supply copies of descriptive literature and recommendations for installation.

B. Certificates: Supply copies of manufacturer's certification that supplied products comply with specification requirements.

PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids, or in original unopened protective packaging.

B. Store materials to prevent physical damage.

C. Protect material during transportation and installation to avoid physical damage.

1.6 PROJECT RECORD DRAWINGS

A. Submit documents

B. Accurately record location of manholes, rim, and invert elevations of all incoming and outgoing pipes.

MATERIALS

A. Air/Vacuum Release Manhole.
   1. Precast concrete, conforming to ASTM Specification C478.
      a. Minimum 28-day compressive strength of 4,000 psi, rated for H-20 loading.
   2. Eccentric cone section.
   3. Base and barrel sections: Circular components of minimum one (1) foot and maximum four (4) foot deep segments.
   4. Provide exterior damproofing.
      a. PPS 922 Superseal, or approved equal.
   5. Manhole inverts to be precast or poured in place. Concrete to be 3,000 psi minimum.
   6. Manhole Steps
      a. Copolymer polypropylene plastic coated steel or forged aluminum alloy conforming to applicable safety requirements.
         1. Steel: ½-inch diameter grade 60, minimum
         2. Aluminum: 6061-T6 or equal.
      b. Minimum width 16", and placed 12" on center.

B. Valve Pit Structure.
   1. Precast concrete, conforming to ASTM Specification C478.
      a. Minimum 28-day compressive strength of 5,000 psi, rated for H-20 loading.
   2. Flat-top Cover section.
      a. Access hatch shall be cast in cover.
   3. Base and barrel sections: Circular components of minimum one (1) foot and maximum six (6) foot deep segments.
   4. Provide exterior damproofing.
      a. PPS 922 Superseal, or approved equal.
   5. Structure Steps
      a. Copolymer polypropylene plastic coated steel or forged aluminum alloy conforming to applicable safety requirements.
         1. Steel: ½-inch diameter grade 60, minimum
         2. Aluminum: 6061-T6 or equal.
      b. Minimum width 16", and placed 12" on center.

C. Pump Station Structure.
   1. Precast concrete, conforming to ASTM Specification C478.
      a. Minimum 28-day compressive strength of 5,000 psi, rated for H-20 loading.
   2. Flat-top Cover section.
      a. Access hatch shall be cast in cover.
   3. Base and barrel sections: Circular components of minimum one (1) foot and maximum six (6) foot deep segments.
   4. Provide exterior damproofing.
      a. PPS 922 Superseal, or approved equal.
   5. Concrete Haunch to be precast or poured in place. Concrete to be 3,000 psi minimum.

6. Structure Steps
   a. Copolymer polypropylene plastic coated steel or forged aluminum alloy conforming to applicable safety requirements.
      1. Steel: ½-inch diameter grade 60, minimum
      2. Aluminum: 6061-T6 or equal.
   b. Minimum width 16", and placed 12" on center.
7. Interior Liner:
   a. Pump Station walls and floor shall have a HDPE liner.
      1. GSE StudLiner or approved equal
      2. Minimum Thickness: 3.00mm ASTM D 5199.
      3. Tensile Properties Strength at Yield: 2,200lb/in^2 ASTM D 6693 Type IV.
      2. Stud Pull-Out Strength: >14,000lb/ft^2.

D. Pipe-to-Manhole Joints
   1. Molded neoprene compound, conforming to ASTM Specification C923 or modular seals, Link-Seal, as indicated on the drawings

E. Frames and Covers.
   1. All frame and cover castings shall be American made. Foreign castings will not be considered.
   2. Gray iron conforming to ASTM Specification A48-83, Class 30B.
   3. Manholes
      a. Cover labeled “SEWER”, in 3" high letters.
      b. Lebaron Model LA246 (65041) 24”x6” frame with Sewer LA24C1 (65100) style 24” cover as distributed by E.J. Prescott or approved equal.

F. Access Hatch
   1. The access hatch shall be designed for exterior applications.
   2. Frame shall be extruded aluminum with an integral seat and continuous anchor flange on all four sides.
   3. The hinges shall be 316 stainless steel hinges with 316 stainless steel tamper-resistant bolts/locknuts.
   4. Door leaf shall be ¼-inch thick aluminum diamond plate.
   5. The diamond plate door panel is equipped with a flush aluminum drop handle and an automatic hold open arm with red vinyl grip that shall lock the cover in the 90-degree open position.
   6. Access hatch shall have a pedestrian load rating of 300 PSF.
   7. Access hatch size:
      a. Valve Pit: As indicated on the drawings
      b. Pump Station Structure: As indicated on the drawings
   8. Access hatch shall be Model APS Series 300 as manufactured by USF Fabrication, Inc., or approved equal.

ANTI-FLOTATION SLAB

A. Certificate of Design: The CONTRACTOR shall be responsible for design of all precast structures including anti-flotation slabs and may provide the precast structures requiring anti-flotation slabs as one complete unit. Submit a certificate of design signed by a professional Engineer, registered in the State of Maine and having five (5) years minimum experience in the design of similar structures, certifying that all precast structures including the anti-flotation slabs, whether provided separately or as a monolithic unit, have been designed to withstand all forces including soil, traffic and hydrostatic in accordance with all applicable laws, regulations, rules, and codes.

B. Design of Anti-Flotation Slabs: Buoyancy calculations to determine necessary anti-flotation measures shall be based upon the following:

1. All calculations for manholes, catch basins, and structures shall be based upon a fully submerged flood and/or groundwater condition.

EXAMINATION

A. Verify site conditions noting irregularities affecting work of this section.

B. Beginning of work means acceptance of existing conditions.

INSTALLATION

A. Manholes and Structures:
   1. Establish pipe invert elevations for all incoming and outgoing pipes as indicated on Contract Drawings.
   2. Place manholes on compacted foundation of ¾-inch crushed stone of not less than 12-inches depth and not less than 12-inches wider than the base. Place pump station and valve pit structures on compacted foundation of ¾-inch crushed stone of not less than 18-inches depth and not less than 12-inches wider than the base.
   3. Install precast barrel sections to minimize use of precast concrete rings for shimming frames and covers to finish grade.
      a. In no case shall precast concrete ring shimming exceed one foot in height.
   4. Tightly seal all joints with 2 strips of Kent Seal No. 2, or approved equal.
   5. Plug all lift holes and parget all joints with non-shrinking mortar.
   6. Excavation Drainage
      a. Provide temporary channels as required for water flowing along or across work site.
      b. Pumped or drained water: Suitably disposed, causing no damage to adjacent property or interference with work.
      c. In no case is drainage to be allowed though pipes being installed.
   7. All manholes, catch basins and structures shall be wrapped in a minimum of four layers of high grade polyethylene frost wrap 6 mils thick to a minimum depth of 7 feet.

FIELD QUALITY CONTROL

A. Structure Testing
   1. General:
      a. Perform test on all manholes.
      b. Perform testing in presence of Engineer.
      c. Testing may be performed by one of the four following methods as applicable.
   2. Exfiltration Tests Prior to Backfilling:
      a. Fill manhole with water to top of frame.
      b. After 15 minutes, if no moving water is visible on exterior surface, manhole is satisfactorily watertight.
   3. Exfiltration Test After Backfilling:
      a. Fill manhole with water to top of frame.
      b. Allow up to 2 hours at contractor's discretion, for wall absorption.
      c. After absorption period, refill manhole to top of frame.
      d. Test period - eight (8) hours.
      e. After test period, refill manhole to top of frame, measuring water volume added.
      f. Exfiltration limit: Not to exceed 1 gallon per day per vertical foot of depth of utility access hole.
   4. Infiltration Tests:
      a. Permitted on portion of manholes below groundwater level.
      b. Test period - 15 minutes.
      c. After test period, if no moving water visible on interior surface, portion of manhole below groundwater is satisfactorily watertight.
   5. Vacuum Test:
      a. Install testing equipment per manufacturer's instruction.
      b. Draw a vacuum of 10 inches of mercury (Hg) on manhole.
      c. Time the loss of one (1) inch of Hg.
      d. Passing test: one (1) inch loss in greater than two (2) minutes.
      e. If test fails, locate leak(s) and make repairs, and retest until passing test attained.
      f. Test manhole with exfiltration test if vacuum cannot be attained.

B. Manhole Repairs
   1. Correct leakage by reconstruction, replacement of gaskets and/or other Engineer approved methods.

METHOD OF MEASUREMENT

Each Pump Station shall be measured for payment as one unit, installed and accepted in accordance with the Contract Documents.

Each Valve Pit shall be measured for payment as one unit, installed and accepted in accordance with the Contract Documents.

Each Precast Air/Vacuum Release Manhole shall be measured for payment as one unit, installed and accepted in accordance with the Contract Documents.

BASIS OF PAYMENT

Payment for Pump Station shall be at the contract price. The contract unit price shall be full compensation for all labor, materials, and equipment required to satisfactorily complete the pump station. Satisfactory completion shall include: excavation; sheeting and bracing; furnishing and installing precast sections; furnishing and installing base slab, as necessary; furnishing and installing cover; furnishing and installing access hatch; furnishing and installing invert and haunch; furnishing and installing vent piping; furnishing and installing interior liner; damp-proofing; testing of structure; furnishing, installing and testing pump system including, pumps, valves, piping, guide rails, pull chains, electrical service, junction boxes, control panel, level sensor, floats and communication equipment; providing the specified bedding; backfilling the trench; compacting the trench; maintaining the trench; disposal of surplus materials; handling surface and groundwater; ditching, installing erosion control measures; and, all other operations as may be necessary to satisfactory complete the item as shown on the Contract Drawings and in accordance with Contract Specifications Connection of structure to proposed or existing drain lines shall be incidental to this item.

Payment for this item on interim requisition shall be according to the following percentages:

a. Structure acceptably set in place and backfilled - 80 percent.
b. Structure successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted – 10 percent.
d. All payments shall be subject to pertinent retainage.

Payment for Valve Pit shall be at the contract price. The contract unit price shall be full compensation for all labor, materials, and equipment required to satisfactorily complete the valve pit and related appurtenances. Satisfactory completion shall include: excavation; sheeting and bracing; furnishing and installing precast sections; furnishing and installing cover; furnishing and installing access hatch; furnishing and installing vent piping; furnishing and installing interior piping, valves, fittings and supports; damp-proofing; testing of structure; furnishing and installing drain piping, fittings and valves; providing the specified bedding; backfilling the trench; compacting the trench; maintaining the trench; disposal of surplus materials; handling surface and groundwater; ditching; installing erosion control measures; and, all other operations as may be necessary to satisfactory complete the item as shown on the Contract Drawings and in accordance with Contract Specifications. Connection of structure to proposed force main shall be incidental to this item.

Payment for this item on interim requisition shall be according to the following percentages:

a. Structure acceptably set in place and backfilled - 80 percent.
b. Structure successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted – 10 percent.
d. All payments shall be subject to pertinent retainage.

Payment for Precast Air/Vacuum Release Manhole shall be at the contract unit price. The contract unit price shall be full compensation for all labor, materials, and equipment required to satisfactorily complete the precast concrete air release manhole. Satisfactory completion shall include: excavation; sheeting and bracing; furnishing and installing precast sections; furnishing and installing cover; furnishing and installing frames and covers; furnishing and installing concrete grade rings; furnishing and installing invert; furnishing and installing air/vacuum release valves, supports, fittings and appurtenances; damp-proofing; testing of structure; providing the specified bedding; backfilling the trench; compacting the trench; maintaining the trench; disposal of surplus materials; handling surface and groundwater; ditching; installing erosion control measures; and, all other operations as may be necessary to satisfactory complete the item as shown on the Contract Drawings and in accordance with Contract Specifications. Connection of structure to proposed or existing sanitary sewers shall be incidental to this item.

Payment for this item on interim requisition shall be according to the following percentages:

a. Manhole acceptably set in place and backfilled - 80 percent.
b. Manhole successfully cleaned and tested - 10 percent.
c. As-builts provided and accepted – 10 percent.
d. All payments shall be subject to pertinent retainage.

Payment will be made under:

Pay Item	Pay Units
801.092 Pump Station	Each
801.21 Valve Pit	Each
801.22 Air/Vacuum Release Manhole	Each

APPENDIX A

MAINE TUNPIKE AUTHORITY WORK PERMIT

MAINE TURNPIKE AUTHORITY
WORK PERMIT RULES AND GUIDELINES

Prior to any work or installation of any facility on **Maine Turnpike Authority** land, a **Municipality, Contractor,** or **other Person requesting access (Permittee)** is required to file application with the **Authority** for a work permit. Said permit will be issued under the following terms and conditions;

Permittee indemnifies and holds harmless the **Maine Turnpike Authority** from any and all responsibility related to work on the aforesaid property or the presence thereon of **Permittee's** employees and agents. This includes, but is not limited to, any claims, losses damages and expenses (including attorney's fees and litigation costs) that arise from or are related to the presence of **Permittee's** employees or agents on the property. Nothing contained herein is intended to waive the defenses and immunities available to the **Authority** with respect to third parties under the provisions of State or Federal Law including, but not limited to, the defenses and immunities provided under the Maine Tort Claims Act.

Insurance

Prior to any entrance onto the **Authority's** land, **Permittee** will file with the **Authority** certificates of insurance evidencing public liability insurance and workers compensation insurance with such limits as the **Authority** shall require, which in all cases shall be a minimum of one million dollars ($1,000,000), and the **"Maine Turnpike Authority"** shall be named as an additional insured.

Permittee shall maintain the insurance required by this paragraph with the **Authority** named as an additional insured, for so long as **Permittee's** employees or agents will be accessing **Authority** property whether the access is for construction or for routine maintenance and operation of this or any other installation.

Schedule

Permittee shall notify the **Authority** in advance of its work schedule. The **Authority** must approve of the schedule, including traffic control plan, and may decide to have an Inspector present while the work is being completed. Time of day restrictions may be enforced based on time of year and peak travel flow.

Costs

The **Permittee** shall be responsible for all costs incurred by the **Authority** acting in connection with the review, assessment, and negotiation of, and any necessary investigation into, any matters associated with this permit, including, but not limited to costs of reviewing any materials or documents submitted; any field work done in connection therewith, any dig safe, engineering, survey, personnel costs, or legal fees associated therewith, whether or not the project is ever carried to a successful conclusion. Prepayment of costs may be required at **Authority's** discretion.

Safety

The **Permittee** must abide by all applicable local, state, and federal regulations pertaining to workplace safety, including but not limited to high visibility clothing, signage, and warning lights. Median openings and toll plaza U-turns will not be permitted. Any traffic stoppages will be done with the **Authority's** approval and with State Police participation.

Revocation

The **Authority** further reserves the right to revoke the work permit in the event of a breach of its conditions as well as for any reason whatsoever that, in the sole judgment of the **Authority**, warrants such a revocation.

Contact

The **Permittee** shall make application to the **Authority** in writing. Said application will include, but is not limited to applicable plan sheets showing scope of work, traffic control plans, schedule, and insurance certificate. Applications may be submitted to:

Maine Turnpike Authority
Right of Way Department
2360 Congress Street
Portland, ME 04102

For questions or additional information contact the Right of Way Department at (207) 871-7771 Ext. 355 or 350
jroberts@maineturnpike.com

At such time a work permit is issued by the Right of Way Department, the **Permitee** will be directed to the appropriate contact person for the duration of the project.

Dig Safe requests will be made to **Dig Safe** (1-888-DIG-SAFE or 811) and to **DigSmart of Maine** for private utility identification. Proof of utility location must be received prior to the issuance of any work permit that involves earthwork. The dig safe job number is to be provided to:

John D. Roberts, PLS
Maine Turnpike Authority
2360 Congress Street
Portland, ME 04102
(207) 482-8350
jroberts@maineturnpike.com

DigSmart of Maine
114 Sawyer Road
Scarborough, ME 04074
(207) 749-7231
www.digsmartofmaine.com

On the Website, go to the *Schedule Work* button to complete DigSmart's electronic request form.

MAINE TURNPIKE AUTHORITY
WORK PERMIT

The **Maine Turnpike Authority** grants permission to **_____**(Permittee) to enter upon the property of the Maine Turnpike Authority in _____, Maine as shown on Plans titled "_____"for the purpose of:

Subject to a document titled "Maine Turnpike Authority - Work Permit Rules and Guidelines" and the following conditions:

1) **Permitee** indemnifies and holds harmless the **Maine Turnpike Authority** from any and all responsibility related to work on the aforesaid property or the presence thereon of **Permitee's** employees and agents. This includes, but is not limited to, any claims, losses damages and expenses (including attorney's fees and litigation costs) that arise from or are related to the presence of **Permitee's** employees or agents on the property. Nothing contained herein is intended to waive the defenses and immunities available to the **Maine Turnpike Authority** with respect to third parties under the provisions of State or Federal Law including, but not limited to, the defenses and immunities provided under the Maine Tort Claims Act.

2) Prior to any entrance onto the Authority's land, **Permitee** will file with the **Maine Turnpike Authority** certificates of insurance evidencing public liability insurance and workers compensation insurance with such limits as the **Maine Turnpike Authority** shall require, which in all cases shall be a minimum of one million ($1,000,000) dollars, and the **Maine Turnpike Authority** shall be named as an additional insured.

Permitee shall maintain the insurance required by this paragraph with the Authority named as an additional insured, for so long as **Permitee's** employees or agents will be accessing Authority property whether the access is for construction or for routine maintenance and operation of this or any other installation.

3) **Permitee** shall notify the Authority in advance of its work schedule. The Authority must approve of the schedule and may decide to be present while the work is being completed. The **Permitee** acknowledges and agrees that the **Permitee** shall be responsible for all costs incurred by the **Maine Turnpike Authority** acting in connection with the review, assessment, and negotiation of, and any necessary investigation into, any matters associated with this permit, including, but not limited to costs of reviewing any materials or documents submitted; any field work done in connection therewith, and any engineering, dig safe, survey, or legal fees associated therewith, whether or not the project is ever carried to a successful conclusion.

4) The **Permitee** must abide by all applicable local, state, and federal regulations pertaining to workplace safety, including but not limited to high visibility clothing, signage, and warning lights. Median openings shall not be used.

5) The **Maine Turnpike Authority** further reserves the right to revoke this permit in the event of a breach of its conditions as well as for any reason whatsoever that, in the sole judgment of the **Authority**, warrants such a revocation.

Signed;

By:

_____ _____

Stephen R. Tartre, PE Date
Maine Turnpike Authority

Name Date

_____

Company Name

APPENDIX B

GEOTECHNICAL REPORT

The key to success starts with a solid foundation.
ENGINEERING | EXPLORATION | EXPERIENCE

Geotechnical Report

Directional Drilling
Auburn, Maine

Client

CES, Inc.
640 Main Street
Lewiston, Maine 04412

Project #: 16017
Date: 7/13/16

SUMMIT
GEOENGINEERING SERVICES

145 Lisbon Street (PO Box 7216) Lewiston, Maine 04243 | (207) 576-3313
173 Pleasant Street Rockland, Maine 04841 | (207) 318-7761
www.summitgeoeng.com

July 13, 2016
Summit #16017

Attn: Tom Daniels, P.E.
CES, Inc.
640 Main Street
Lewiston, Maine 04412

Reference: Geotechnical Engineering Services
Directional Drilling – Interstate I-95 Auburn, Maine

Dear Mr. Daniels;

We have completed our geotechnical investigation for the proposed directional drilling beneath interstate I-95 in Auburn, Maine. Our scope of services included performing two borings at the site and preparing this report summarizing our findings and geotechnical recommendations.

In general, the soil profile encountered at the site consists of topsoil overlying glacial marine deposit (silt-clay) and/or marine regressive sand deposit (silty fine sand) explored to a depth of 22 feet. Groundwater was observed at a depth of 19.5 feet in boring B-1.

Our geotechnical evaluation is based on existing site conditions. We recommend Summit Geoengineering Services (SGS) be notified if plans for the proposed structure change significantly.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

Sincerely yours,
Summit Geoengineering Services

Erika Stewart

Erika Stewart, E.I
Geotechnical Engineer

Craig W. Coolidge

Craig W. Coolidge, P.E.
Vice President
Principal Engineer

145 Lisbon Street (PO Box 7216) Lewiston, Maine 04243 | (207) 576-3313
173 Pleasant Street Rockland, Maine 04841 | (207) 318-7761
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1.0 Project and Site Description

Summit Geoengineering Services (SGS) was asked by CES, Inc. to conduct a geotechnical investigation and evaluate subsurface conditions for consideration of directional drilling associated with installation of a sewer force main beneath interstate I-95 in Auburn, Maine. The site is located near mile 74 of Interstate I-95 adjacent to an existing pump station located on Hotel Road. The section of highway at the proposed crossing location consists of a large fill embankment which slopes off to native grade at each side. The sewer force main is proposed at an approximate depth of six feet below native grade.

2.0 Explorations & Laboratory Testing

2.1 Explorations

Summit Geoengineering Services (SGS) observed the subsurface conditions with the drilling of 2 test borings on June 11, 2016 using a track mounted AMS Power Probe 9500 VTR. Borings were advanced to a depth of 22 feet with no refusal using 2 ¼-inch hollow stem augers. Soils were visually classified (ASTM D2488) by SPT split spoon sampling (ASTM D1586) at 5-foot intervals. The explorations were approximately located by SGS relative to existing site features. The borings were performed on each side of the highway at the base of the embankment with boring B-1 on the northbound side of I-95 and boring B-2 on the southbound side of I-95. The boring locations are shown on the Test Boring Location Plan in Appendix A. Photographs and Logs of the explorations are provided in Appendix B.

2.2 Laboratory Testing

One sample of the native marine regressive sand was tested for grain size analyses in accordance with ASTM D6913. Results of the laboratory tests are summarized below. Detailed results of the lab testing can be found in Appendix C.

GRADATION SUMMARY TABLE							
Boring No.	**Sample No.**	**Depth**	**Composition**			**USCS**	Moisture Content
			Gravel	Sand	Fines		
B-1	S-2	5’ – 7’	0%	54.8%	45.2%	SM	23.4%

3.0 Subsurface Conditions

The subsurface conditions generally consist of ***topsoil*** overlying ***glacial marine deposit*** (boring B-2) overlying ***marine regressive sand deposits*** explored to a depth of 22 feet. ***Groundwater*** was

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encountered at a depth of 19.5 feet in boring B-1. Groundwater was not observed in boring B-2. The subsurface conditions are further described as follows:

3.1 Soil Layers

Topsoil is present at the ground surface and ranges from 1 to 2 feet in thickness. The topsoil consists of brown sandy silt to silty sand with some rootlets and is visually classified as SM and ML in accordance with the Unified Soil Classification System (USCS). The topsoil is very loose/soft and humid to damp.

Glacial marine deposit (Presumpscot formation) is present in boring B-2 at an approximate depth range of 2 to 11 feet below the ground surface. The glacial marine deposit consists of olive brown and mottled silty clay to clayey silt with little sand and is visually classified as CL, ML-CL and ML in accordance with USCS. Blow counts from SPT split spoon sampling in the deposit ranged from 7 to 17 blows per foot (bpf), averaging 12 bpf, and approximate unconfined compression strength (q_u) from pocket penetrometer tests ranged from 2,000 to 6,500 psf and averaged 5,000 psf indicating stiff conditions. The glacial marine deposit is considered damp to moist.

Marine regressive sand deposit is present beneath the topsoil in boring B-1 and beneath the glacial marine deposit in boring B-2. The marine regressive sand deposit generally consists of brown silty fine sand to silt with little sand. Based on gradation results for sample B-1, S-2, the marine regressive deposit is classified as SM in accordance with the USCS. Other portions of the deposit are visally classified as SP-SM and ML in accordance with USCS. Blow counts from SPT split spoon sampling in the deposit ranged from 8 to 22 blows per foot (bpf) and averaged 13 bpf indicating medium density (compact conditions). The marine regressive sand deposit is considered damp to wet with depth. Occasional mottled and wet sand seams were encountered within the marine regressive sand deposit, specifically in boring B-2 at depths of 11.3 and 15.5 feet.

3.2 Bedrock

Bedrock was not encountered in the explorations to a depth of 22 feet. Mapping by the Maine Geological Survey indicates bedrock at the site consists of Carboniferous alkali feldspar granite. Surficial materials mapping suggests overburden thickness near the site ranges from outcrops (west of site) to 142 feet (south of site).

3.3 Groundwater

Groundwater was measured at a depth of 19.5 feet below the ground surface in boring B-1. Groundwater was not encountered in boring B-2, but a wet seam was observed within the marine regressive sand deposit at a depth of 15.5 to 16 feet. We anticipate groundwater is generally

present within the lower portions of the marine regressive sand deposit and within sandy seams. Mottled coloring indicates groundwater levels may fluctuate during wet periods such as rain and snowmelt.

4.0 Geotechnical Considerations

We anticipate that the sewer force main will be constructed at a depth of approximately six feet below existing grade using horizontal directional drilling (HDD). Based on this, the pipe will be constructed within native silty sand on the northbound side of the interstate and within native silty clay on the southbound side of the interstate.

Groundwater was encountered at a depth of 19.5 feet below existing grade on the northbound side of the interstate (boring B-1) and no groundwater was observed on the southbound side. In general, groundwater is not anticipated within the jacking and receiving pit excavations. However, perched seasonal groundwater may be present within sandy seams. If necessary, dewatering may consist of shallow sumps installed at the base of the excavation to permit excavation in the dry. Surface water (rain or snowmelt) should be diverted using cut-off trenching, sandbags, sloping, or other suitable method to adequately prevent surface water flow from entering the excavation.

The native sand (marine regressive deposit) is classified as type C soil and the glacial marine silt-clay is classified as type B soil. General excavations less than a depth of 20 feet are limited to a maximum side slope of 1 horizontal to 1 vertical within type B soils (silt-clay). Slopes should be reduced to 1.5 horizontal to 1 vertical within type C soils (sand) and/or below groundwater. These recommendations are in conformance with Occupational Safety and Health Administration (OHSA) excavation guidelines.

5.0 Closure

Our recommendations are based on professional judgment and generally accepted principles of geotechnical engineering and project information provided by others. Some changes in subsurface conditions from those presented in this report may occur. Should these conditions differ materially from those described in this report, SGS should be notified so that we can re-evaluate our recommendations.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

145 Lisbon Street (PO Box 7216) Lewiston, Maine 04243 | (207) 576-3313
173 Pleasant Street Rockland, Maine 04841 | (207) 318-7761
www.summitgeoeng.com

APPENDIX A

TEST BORING LOCATION PLAN

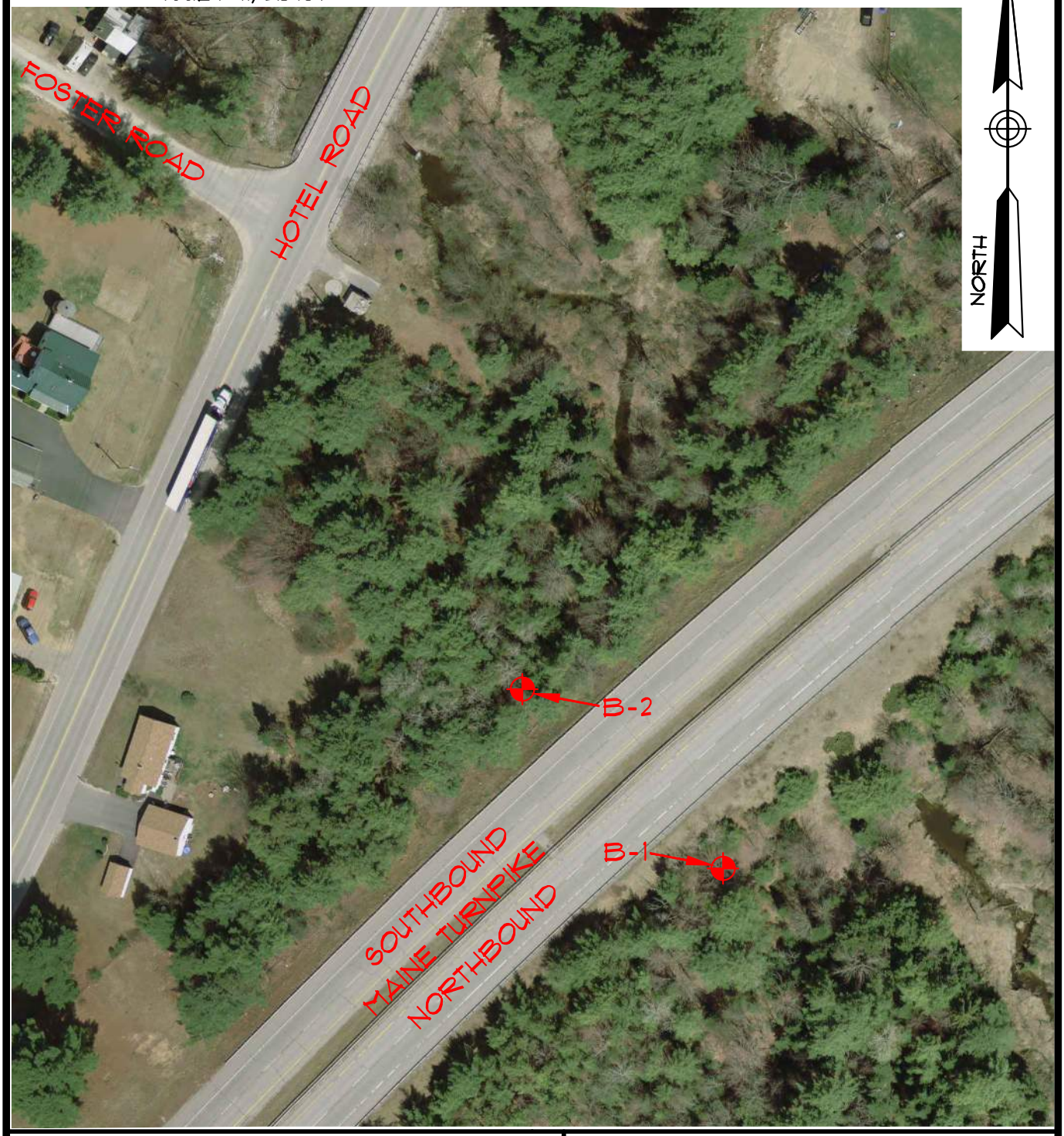
GEOLOGIC MAPS

LEGEND

B-1 SUMMIT TEST BORING (JULY 11, 2016)

PLAN REFERENCE

AERIAL IMAGE (2013) OBTAINED FROM MAINE OFFICE OF G.I.S. WEBSITE.



TEST BORING LOCATION PLAN
DIRECTIONAL DRILLING

MAINE TURNPIKE - AUBURN, MAINE
PREPARED FOR
CES, INC.

DATE: 7-13-16	DRAWN BY: KRF	CHECKED BY: CWC
JOB: 16017	SCALE: 1" = 100'	FILE: 16017 BOR

145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

SUMMIT
GEOENGINEERING SERVICES
www.summitgeoeng.com

LEGEND

Pmrs — MARINE REGRESSIVE SAND DEPOSITS

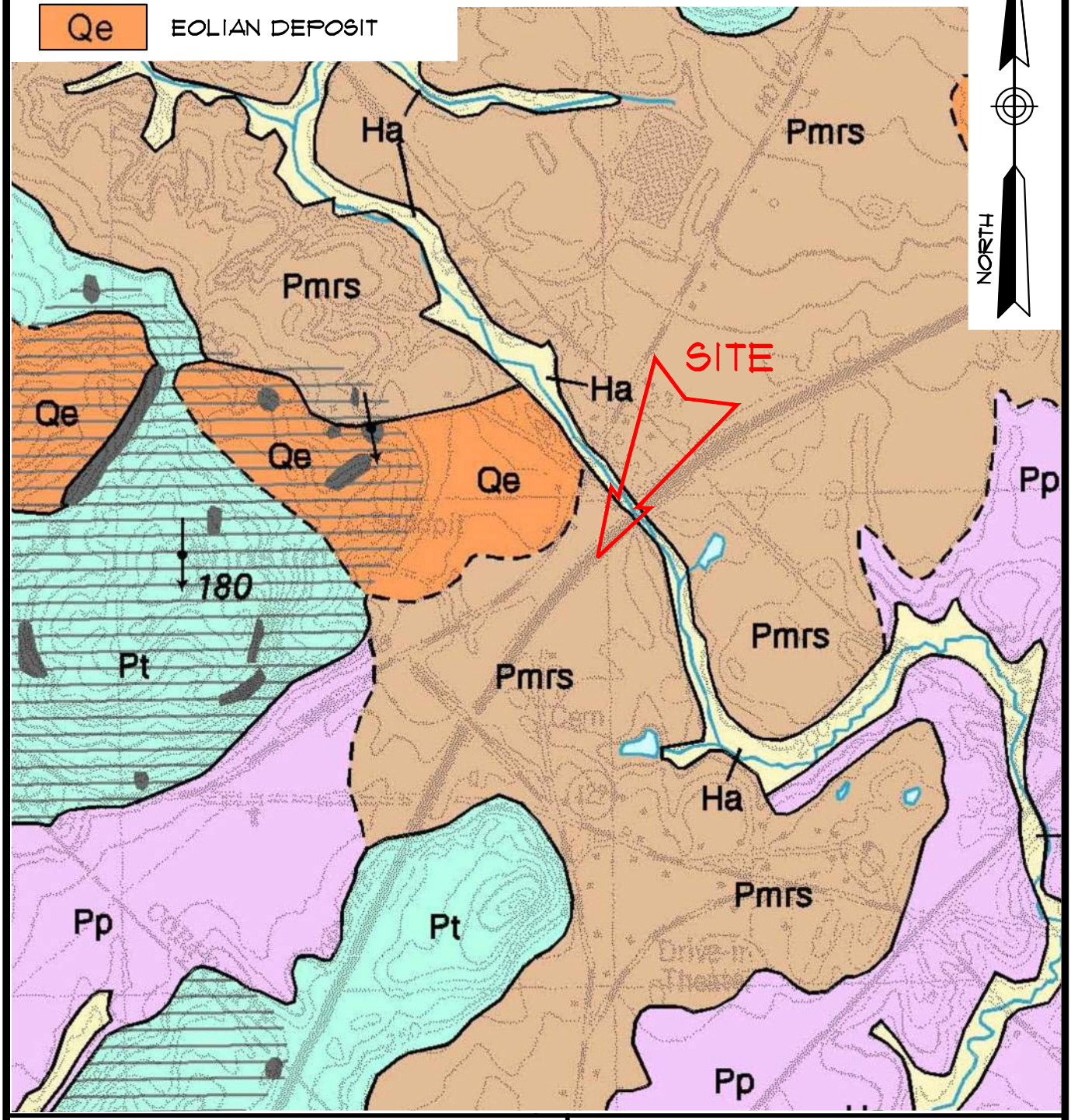
Qe — EOLIAN DEPOSIT

PLAN REFERENCE

SURFICIAL GEOLOGY, MINOT QUADRANGLE, DATED 2002, PREPARED BY MAINE GEOLOGICAL SURVEY.

N

NORTH



SURFICIAL GEOLOGY MAP
DIRECTIONAL DRILLING

MAINE TURNPIKE - AUBURN, MAINE
PREPARED FOR
CES, INC.

DATE: 7-13-16	DRAWN BY: KRF	CHECKED BY: CWC
JOB: 16017	SCALE: 1" = 1000'	FILE: 16017 BOR

145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

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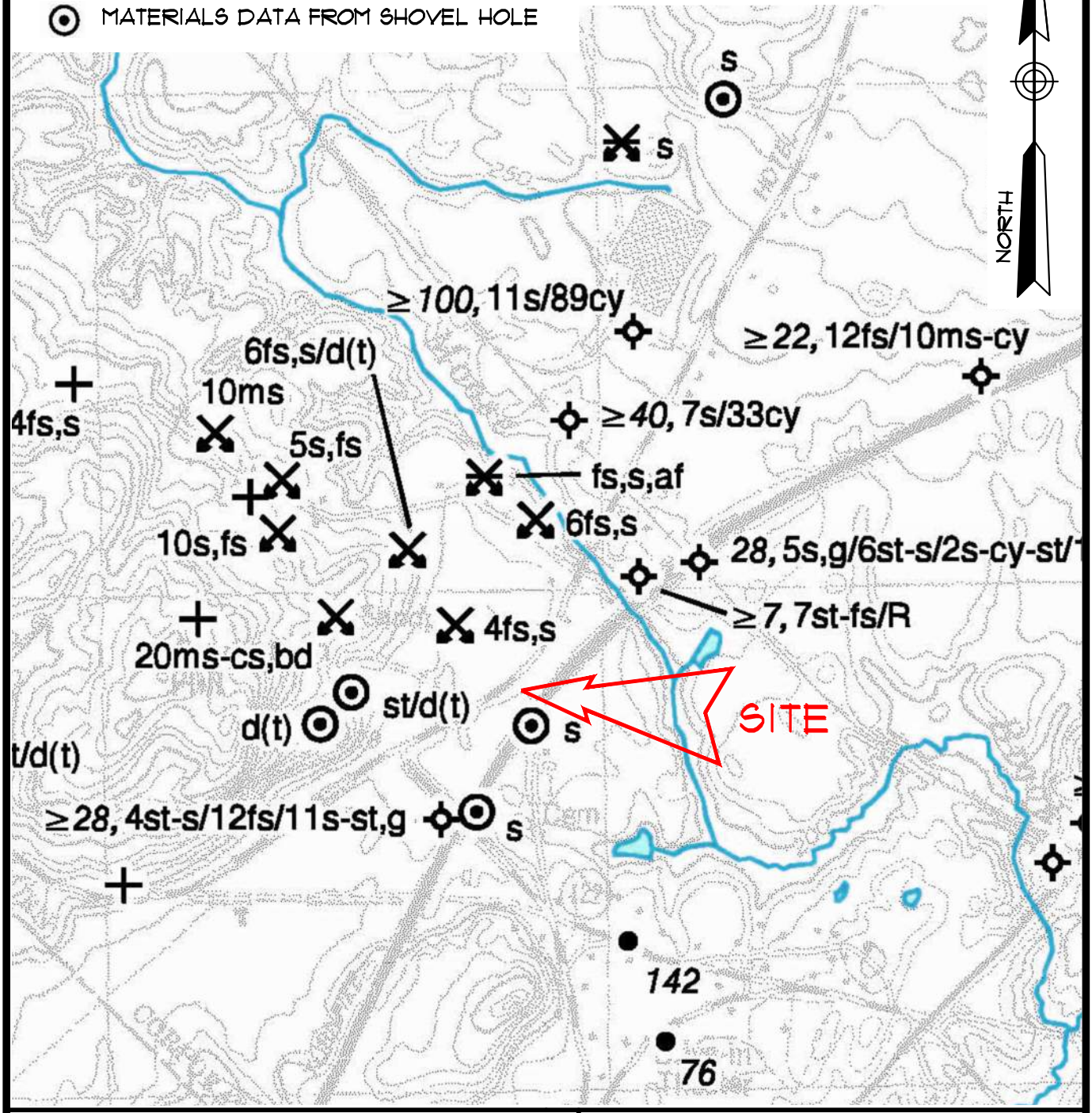
LEGEND

- BORROW PIT (RECENTLY ACTIVE)
- TEST BORING WITH MATERIALS DATA
- MATERIALS DATA FROM SHOVEL HOLE

PLAN REFERENCE

SURFICIAL MATERIALS, MINOT QUADRANGLE, DATED 2001, PREPARED BY MAINE GEOLOGICAL SURVEY.



SURFICIAL MATERIALS MAP
DIRECTIONAL DRILLING

MAINE TURNPIKE - AUBURN, MAINE
PREPARED FOR
CES, INC.

DATE: 7-13-16	DRAWN BY: KRF	CHECKED BY: CWC
JOB: 16017	SCALE: 1" = 1000'	FILE: 16017 BOR

145 LISBON ST. - SUITE 601
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APPENDIX B

BORING LOGS

PHOTOGRAPH LOGS

EXPLORATION COVER SHEET

The exploration logs are prepared by the geotechnical engineer from both field and laboratory data. Soil descriptions are based upon the Unified Soil Classification System (USCS) per ASTM D2487 and/or ASTM D2488 as applicable. Supplemental descriptive terms for estimated particle percentage, color, density, moisture condition, and bedrock may also be included to further describe conditions.

Drilling and Sampling Symbols:

SS = Split Spoon Sample
UT = Thin Wall Shelby Tube
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RW = Rotary Wash
SV = Shear Vane
PP = Pocket Penetrometer
RC = Rock Core Sample
FV = Field Vane Shear Test
PS = Concrete Punch Sample
Hyd = Hydraulic Advancement of Drilling Rods
Push = Direct Push of Drilling Rods
WOH = Weight of Hammer
WOR = Weight of Rod
PI = Plasticity Index
LL = Liquid Limit
W = Natural Water Content
USCS = Unified Soil Classification System
Su = Undrained Shear Strength
Su(r) = Remolded Shear Strength

Water Level Measurements:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations. Groundwater monitoring wells may be required to record accurate depths and fluctuation.

Gradation Description and Terminology:

Boulders:	Over 12 inches	Trace:	Less than 5%
Cobbles:	12 inches to 3 inches	Little:	5% to 15%
Gravel:	3 inches to No.4 sieve	Some:	15% to 30%
Sand:	No.4 to No. 200 sieve	Silty, Sandy, etc.:	Greater than 30%
Silt:	No. 200 sieve to 0.005 mm		
Clay:	less than 0.005 mm		

Density of Granular Soils and Consistency of Cohesive Soils:

CONSISTENCY OF COHESIVE SOILS		DENSITY OF GRANULAR SOILS	
SPT N-value blows/ft	**Consistency**	**SPT N-value blows/ft**	**Relative Density**
0 to 2	Very Soft	0 to 4	Very Loose
2 to 4	Soft	5 to 10	Loose
5 to 8	Firm	11 to 30	Compact
9 to 15	Stiff	31 to 50	Dense
16 to 30	Very Stiff	>50	Very Dense
>30	Hard		

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-1**

Project:	I-95 Directional Drilling
Location:	Hotel Road and I-95
City, State:	Auburn, Maine
Project #:	16017
Sheet:	1 of 1
Chkd by:	ELS

Drilling Co:	Summit Geoengineering Services
Driller:	C.Coolidge, P.E.
Summit Staff:	P. Spicer, M. Hardison, E.I.
Boring Elevation:	Unknown
Reference:	N/A
Date started:	7/11/2016 Date Completed: 7/11/2016

DRILLING METHOD		SAMPLER	
Vehicle:	AMS	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2-1/4" HSA	Hammer:	140 lb
Hammer Style:	Auto Drop	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/11/2016	19.5' +/-	N/A	Measured in hole, 20' of augers

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/18	0 to 2	1		Dark brown Sandy SILT, some rootlets, very loose/		TOPSOIL
1				2		soft, damp, ML		
				9		Light brown fine SAND, some to little Silt, little		1'+/-
2				18		rootlets, compact, humid, SM		MARINE
								REGRESSIVE DEPOSIT
3								
4								
5								
	S-2	24/20	5 to 7	4		Brown Silty fine SAND, trace rootlets, slightly	Gravel = 0%	
6				4		mottled, loose, damp, SM	Sand = 54.8%	
				4			Fines = 45.2%	
7				5			MC = 23.4%	
8								
9								
10								
	S-3	24/18	10 to 12	4		Same as above, loose to compact, moist, SM		
11				4				
				6				
12				5				
13								
14								
15								
	S-4	24/24	15 to 17	6		Brown fine SAND, some to little Silt, compact,		
16				7		damp, SM		
				9				
17				12				
18								
19								
							Groundwater ▽	
20							at 19.5'	
	S-5	24/24	20 to 22	5		Brown fine SAND, little Silt, some mottling, compact,		
21				7		wet, SP-SM		
				7				
22				9				
						End of boring at 22', no refusal		22'

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
NE = None Encountered

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-2**

Project:	I-95 Directional Drilling
Location:	Hotel Road and I-95
City, State:	Auburn, Maine
Project #:	16017
Sheet:	1 of 1
Chkd by:	ELS

Drilling Co:	Summit Geoengineering Services
Driller:	C.Coolidge, P.E.
Summit Staff:	P. Spicer, M. Hardison, E.I.
Boring Elevation:	Unknown
Reference:	N/A
Date started:	7/11/2016 Date Completed: 7/11/2016

DRILLING METHOD		SAMPLER	
Vehicle:	AMS	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2-1/4" HSA	Hammer:	140 lb
Hammer Style:	Auto Drop	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
7/11/2016	NE	N/A	None Observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/18	0 to 2	1		Dark to light brown Silty SAND, some rootlets,		
1				1		very loose, humid, SM		TOPSOIL
				2				
2				2				
								2'+/-
3								GLACIAL MARINE DEPOSIT
								(Presumpscot
4						Increased drilling resistance at 4.0'		Formation)
5								
	S-2	24/20	5 to 7	5		Olive brown and mottled Silty CLAY to SILT-CLAY,	PP = 6,000 to	
6				8		slightly blocky, stiff to very stiff, damp, CL to ML-CL	6,500 psf	
				9				
7				11				
8								
9								
10								
	S-3	24/24	10 to 12	4		Olive brown Clayey SILT, moist, firm, ML	PP = 2,000 psf	
11				3				
				7		Olive brown SILT, little Sand, trace Clay, compact/		11'+/-
12				5		stiff, moist, ML		MARINE
						(Wet sandy seam from 11.3' to 12')		REGRESSIVE DEPOSIT
13								
14								
15								
	S-4	24/20	15 to 17	4		Brown SILT, little fine Sand, occasional Sand seams,		
16				3		loose, moist, ML		
				5		(Wet sandy seam from 15.5' to 16')		
17				6				
18								
19								
20								
	S-5	24/24	20 to 22	7		Light brown Silty fine SAND, some mottling, damp,		
21				10		compact, SM		
				12				
22				13				
						End of boring at 22', no refusal		22'

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
NE = None Encountered

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

PHOTOGRAPHIC LOG

Client Name:	**Project No.**
CES, Inc.	16017

Photo No. 1

Date: 7-11-2016

Site Location:

Interstate I-95
Auburn, Maine

Description:

Photograph of boring B-1 location adjacent to northbound lane.

Photo No. 2

Date: 7-11-2016

Site Location:

Interstate I-95
Auburn, Maine

Description:

Photograph of auger advancement in boring B-2, adjacent to southbound lane.

SUMMIT
GEOENGINEERING SERVICES

PHOTOGRAPHIC LOG

Client Name:	**Project No.**
CES, Inc.	16017

Photo No. 3

Date: 7-11-2016

Site Location:

Interstate I-95
Auburn, Maine

Description:

Photograph of marine regressive sand in split spoon sample.

Photo No. 4

Date: 7-11-2016

Site Location:

Interstate I-95
Auburn, Maine

Description:

Photograph of glacial maine silt-clay in split spoon sample.

APPENDIX C

LABORATORY TEST RESULTS

SUMMIT
GEOENGINEERING SERVICES

GRAIN SIZE ANALYSIS - ASTM D6913

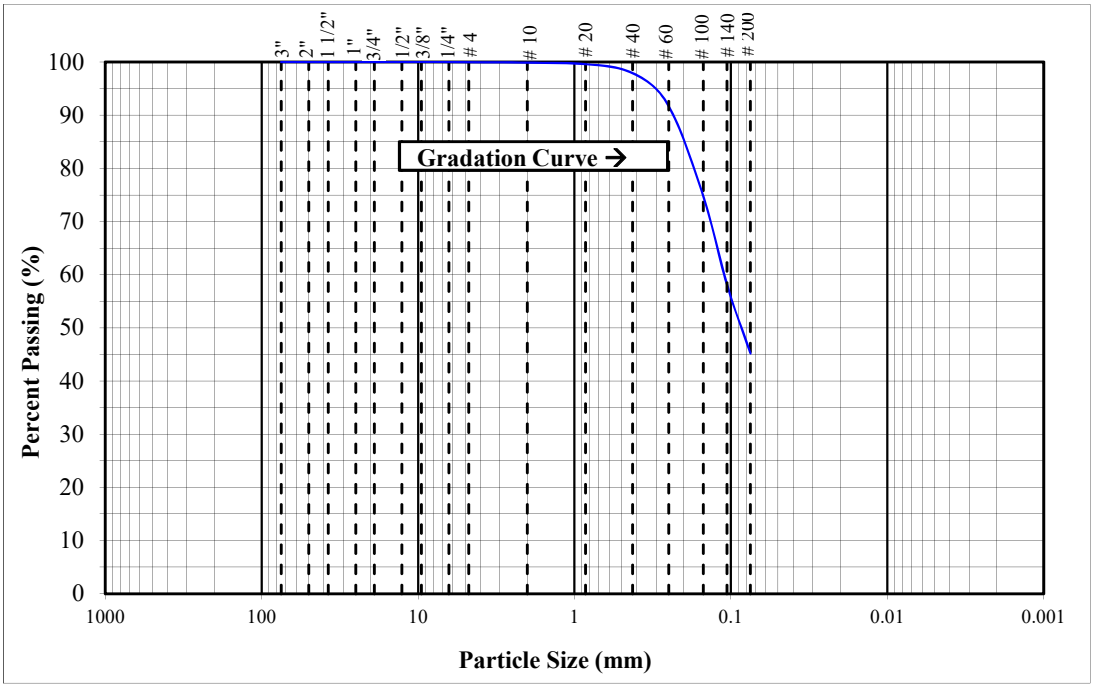
PROJECT NAME:	Directional Drilling	PROJECT #:	16017
PROJECT LOCATION:	Interstate I-95, Auburn, Maine	EXPLORATION #:	B-1
CLIENT:	CES, Inc.	SAMPLE #:	S-2
TECHNICIAN:	Erika Stewart, E.I.	SAMPLE DEPTH:	5' - 7'
TEST DATE:	7/12/2016	SOIL DESCRIPTION:	Brown Silty fine SAND, SM

TEST PROCEDURE

Sample Source: Split Spoon	**Sieve Stack:** Single	**Specimen Procedure:** Moist
Test Method: Method B	**Separating Sieve(s):** No. 4	**Dispersion Type:** (NaPO3)6 Solution

DATA

STANDARD SIEVE DESIGNATION (mm)	ALTERNATIVE SIEVE DESIGNATION (in)	PERCENT PASSING (%)
75	(3 in)	100.0
50	(2 in)	100.0
37.5	(1-1/2 in)	100.0
25.0	(1 in)	100.0
19.0	(3/4 in)	100.0
12.7	(1/2 in)	100.0
9.5	(3/8 in)	100.0
6.35	(1/4 in)	100.0
4.75	(No. 4)	100.0
2.00	(No. 10)	99.9
0.850	(No. 20)	99.6
0.425	(No. 40)	97.9
0.250	(No. 60)	91.7
0.150	(No. 100)	74.7
0.106	(No. 140)	58.2
0.075	(No. 200)	45.2



REMARKS: Moisture Content = 23.4%.

APPENDIX C

PERMIT INFORMATION

February 6, 2017

Ms. Dawn Hallowell
Maine Department of Environmental Protection (MDEP)
17 State House Station
Augusta, ME 04333-0017

Re: MDEP Permit-By-Rule | Auburn Ash Landfill Leachate Forcemain | Auburn, Maine

Dear Ms. Hallowell:

CES, Inc. (CES) is assisting the City of Auburn with the design and permitting of a force main for the Auburn Ash landfill in Auburn, Maine. The proposed work consists of a pump station and cross-country forcemain to discharge leachate from the City's closed ash landfill to the municipal wastewater collection system for treatment. The pump station will be located at the City's closed ash landfill off Old Hotel Road, south of I-95. Approximately 1,525 linear feet of 4-inch diameter HDPE forcemain will be installed to connect to the Auburn Water and Sewer District's Moose Brook pump station located on Hotel Road/Route 122, on the north side of I-95. The forcemain will be directionally drilled under I-95, requiring coordination with the Maine Turnpike Authority (MTA). The City has requested permission from the MTA for the installation of the forcemain on MTA property. The MTA has provided verbal approval of the proposed work and is drafting the license agreement between the City and MTA for the installation of the forcemain. Installation of the proposed forcemain project will result in one wetland crossing and one stream crossing (Moose Brook). Significant wildlife habitats will not be impacted during the course of this project.

The proposed project is expected to begin in January of 2017 and be completed by August of 2017, with approximately nine weeks of construction to complete. CES will coordinate timing of the stream crossing work with Department of Inland Fisheries and Wildlife (DIF&W) and Department of Marine Resources (DMR), with a request to construct the stream crossing outside the July 15th to October 1st window, as conditions allow. If approved, the majority of construction will be completed during the Winter of 2017, prior to high water associated with Spring thaw/runoff. Temporary seeding will be established on all disturbed areas following the Winter construction. Erosion control measures will be removed once final seeding and suitable vegetation are established. Standard erosion control best management practices will be used during the project. The proposed work will comply with the Standards listed in Section 9, "Utility Crossings" of Chapter 305.

Seven Locations in Maine | www.ces-maine.com

465 South Main Street
PO Box 639
Brewer, Maine 04412
T 207.989.4824
F 207.989.4881

The City of Auburn and CES have been working with Matt Young, Project Manager, and Steve Farrar, Project Engineer (MDEP Bureau of Remediation and Waste Management) regarding the installation of the landfill leachate forcemain. Attached, please find the MDEP Permit-By-Rule form, along with the location map, photos, and proposed site plan for the project. Please contact us if we can provide additional information.

Sincerely,
CES, Inc.

Nathan Gustafson, P.E.
Project Engineer

Johanna E. Szillery, CSS
Senior Project Scientist

NAG/JES/gdr
Enc.
cc: City of Auburn, Kristopher Bennett
U.S. Army Corps of Engineers

11/14/2013

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT BY RULE NOTIFICATION FORM
(For use with DEP Regulation, Chapter 305)

PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

Name of Applicant: (owner)	**City of Auburn Kristopher Bennett, Project Engineer**	**Name of Agent:**	**CES, Inc. Attn: Nate Gustfson**		
Applicant Mailing Address:	**60 Court Street**	**Agent Phone # (include area code):**	**(207) 989-4824**		
Town/City:	**Auburn**	**PROJECT Information Name of Town/City:**	**Auburn, ME**		
State and Zip code:	**ME 04210**	**Name of Wetland or Waterbody:**	**Moose Brook**		
Daytime Phone # (include area code):	**(207) 333-6601 Ext. 1134**	**Map #:**	**108**	**Lot #:**	**004**
Detailed Directions to Site:	**South on I-95 take Exit 75, Route 202/4/100, Turn right on Route 202/4/100, after 1 mile turn right onto Poland Spring Road, after 0.5 mile turn right onto Old Hotel Road, follow Old Hotel Road approximately 0.5 mile to the City of Auburn closed Ash Landfill**	**UTM Northing: (if known)**	**44.03004**	**UTM Easting: (if known)**	**70.28341**
Description of Project:	**This project generally consists of the installation of a pump station and cross country force main to discharge leachate from the City's closed ash landfill to the City's wastewater collection system. Proposed project requires the force main cross one wetland and one stream.**				
Part of a larger project? (check one)➔	❑ Yes ☒ No	**After the Fact? (check one)➔**	❑ Yes ☒ No	**Check one➔** This project ☒ does (or) ❑ does not involve work below mean low water (average low water).	

PERMIT BY RULE (PBR) SECTIONS: (Check at least one)

I am filing notice of my intent to carry out work which meets the requirements for Permit By Rule (PBR) under DEP Rules, Chapter 305. I and my agents, if any, **have read** and will comply with all of the standards in the Sections checked below.

- ❑ **Sec. (2) Act. Adj. to Protected Natural Res.**
- ❑ **Sec. (3) Intake Pipes**
- ❑ **Sec. (4) Replacement of Structures**
- ❑ **Sec. (5) REPEALED**
- ❑ **Sec. (6) Movement of Rocks or Vegetation**
- ❑ **Sec. (7) Outfall Pipes**
- ❑ **Sec. (8) Shoreline stabilization**
- ☒ **Sec. (9) Utility Crossing**
- ❑ **Sec.(10) Stream Crossing**
- ❑ **Sec. (11) State Transportation Facil.**
- ❑ **Sec. (12) Restoration of Natural Areas**
- ❑ **Sec. (13) F&W Creation/Enhance/Water Quality Improvement**
- ❑ **Sec. (14) REPEALED**
- ❑ **Sec. (15) Public Boat Ramps**
- ❑ **Sec. (16) Coastal Sand Dune Projects**
- ❑ **Sec. (17) Transfers/Permit Extension**
- ❑ **Sec. (18) Maintenance Dredging**
- ❑ **Sec. (19) Activities in/on/over significant vernal pool habitat**
- ❑ **Sec. (20) Activities located in/on/over high or moderate value inland water-fowl & wading bird habitat or shore-bird feeding & roosting areas**

NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:

- ☒ ***Attach*** **a check for the correct fee amount, payable to: "Treasurer, State of Maine". The current fee for PRB Notifications can be found at the Department's website: http://www.maine.gov/dep/feesched.pdf**
- ☒ ***Attach*** **a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.**
- ☒ ***Attach*** **Proof of Legal Name if applicant is a corporation, LLC, or other legal entity.** Provide a copy of Secretary of State's *registration information* (available at http://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x). Individuals and municipalities are **not** required to provide any proof of identity,
- ☒ ***Attach*** **photos of the proposed site where activity will take place as outlined in PBR Sections checked above.**
- ☒ ***Attach*** **all other required submissions as outlined in the PBR Sections checked above.**

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that ***this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.***

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in the rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

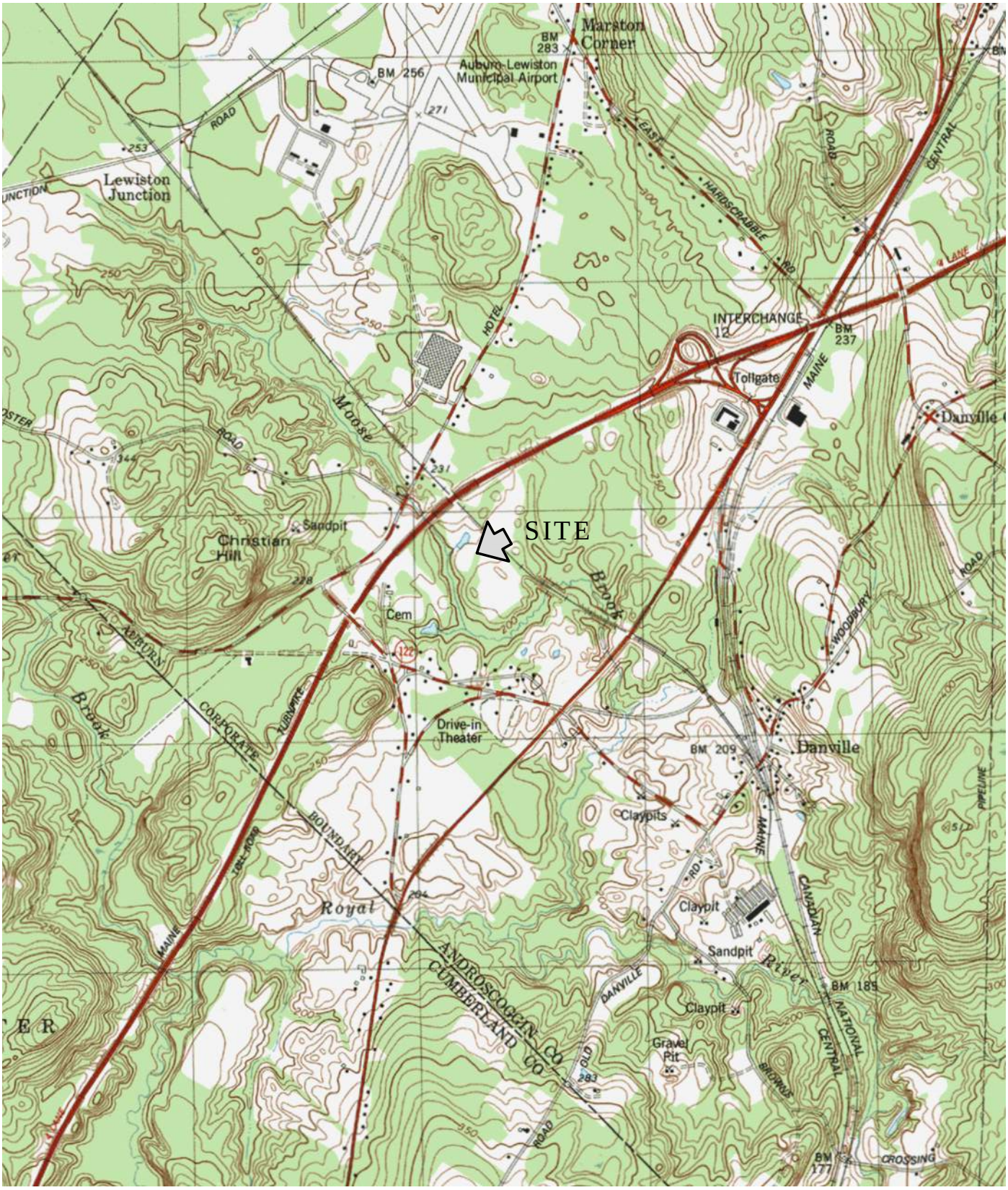
Signature of Agent or Applicant:	Nathan Gustfson	**Date:**	February 6, 2017

Keep a copy as a record of permit. Send the form with attachments via certified mail or hand deliver to the Maine Dept. of Environmental Protection **at the appropriate regional office listed below**. The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. **Work carried out in violation of any standard is subject to enforcement action.**

AUGUSTA DEP 17 STATE HOUSE STATION AUGUSTA, ME 04333-0017 (207)287-3901	PORTLAND DEP 312 CANCO ROAD PORTLAND, ME 04103 (207)822-6300	BANGOR DEP 106 HOGAN ROAD BANGOR, ME 04401 (207)941-4570	PRESQUE ISLE DEP 1235 CENTRAL DRIVE PRESQUE ISLE, ME 04769 (207)764-0477

OFFICE USE ONLY	Ck.#		Staff	Staff	
PBR #	FP	Date	Acc. Date	Def. Date	After Photos

DEPLW0311-O2013



SOURCE:
U.S.G.S. TOPOGRAPHIC QUADRANGLE
AUBURN
@ 1:2,000

CES INC

AUBURN ASH LANDFILL LEACHATE FORCEMAIN
AUBURN, ANDROSCOGGIN COUNTY, MAINE
LOCATION MAP

2016-11-07
10473.009

February 23, 2017

Mr. Rodney Howe
U.S. Army Corps of Engineers, Maine Field Office
675 Western Avenue Suite 3
Manchester, Maine 04351
Rodney.A.Howe@usace.army.mil
SENT VIA EMAIL

Re: Response to Additional Information
MDEP Permit-By-Rule | Auburn Ash Landfill Leachate Forcemain | Auburn, Maine

Dear Rod:

Thank you for your review of the Permit-by-Rule application for the City of Auburn Ash Landfill Leachate Forcemain. This letter is in response to your questions presented in an email dated February 10, 2017. The questions and associated project information are presented below.

1. ***What are the wetland impacts associated with the project? Show both temporary and permanent.***

Wetland Impacts: (see attached Figure 1)

- Temporary (vegetation clearing, construction mats): 4,976 square feet.
- Permanent (fill): 810 square feet in unnamed wetland.

2. How will the stream crossing be constructed?

The proposed work consists of construction of an approximately 1,525 linear feet of 4-inch diameter HDPE forcemain to connect to the Auburn Water and Sewer District's Moose Brook pump station to the Auburn leachate landfill. The proposed utility corridor is 30-feet wide. The forcemain begins at the Auburn Ash landfill property, and extends 600 feet to the west, then 900 feet to the northwest. The utility corridor is the only granted access for construction and maintenance of the forcemain. Construction of the forcemain project required crossing Moose Brook with associated wetland complex and an unnamed wetland.

Project site access will be on existing public roads, and driveways associated with the Auburn leachate landfill. New access roads will not be constructed. Project construction will begin with vegetation clearing. In both wetland crossings, construction mats with geotextile fabric underlain

465 South Main Street
PO Box 639
Brewer, Maine 04412
T 207.989.4824
F 207.989.4881

will be utilized to reduce rutting, erosion and other impacts. Construction will proceed from the landfill (upland areas) to the west. Excavated material will be used to backfill the trench, upon installation of the pipe. In wetlands, excess material not used for backfill will be removed from the wetland.

The stream crossing will be constructed using sandbag coffer dams to isolate the work area and pumps to divert streamflow around the work area. Upon isolation of the area, the forcemain will be dug across the stream. Diversion of Moose Brook and installation of the forcemain is anticipated to be five days. Upon completion of the utility crossing, the cofferdams will be removed, and the pumps turned off and removed. The stream bank will be reshaped as necessary to restore natural slopes. As necessary, jute mats will be used to stabilize the stream bank.

Temporary culverts will be used for the Moose Brook crossing. This temporary crossing will be maintained until construction of southern portion (south of the turnpike) of the forcemain is complete, since the utility corridor is the only access point for construction of this section. Timber mats will be maintained in wetlands while this crossing is in use.

Upon completion, the temporary culverts will be removed, construction mats and fabric will be removed from the wetlands, and vegetation will be allowed to regrow. Temporary seeding will be established on all disturbed areas following construction. Erosion control measures will be removed once final seeding and suitable vegetation are established. Standard erosion control best management practices will be used during the project.

3. What is the area of any tree clearing that will be done?

The proposed 30-foot utility corridor will be cleared for construction of the forcemain, with clearing as follows:

- Tree Clearing: (see attached Figure 1)
- Total (upland and wetland): 30,140 square feet
- Tree clearing, in wetland: 1,665 square feet *
- Tree clearing, in upland: 28,475 square feet

* This figure represents tree clearing in the unnamed wetland crossing. The wetland associated with Moose Brook is dominated by shrubs, namely speckled alder (*Alnus incana*).

4. Provide a copy of the USFWS IPaC report for endangered species. (I will need to do a streamlined consultation with the service for NLEB)

A pdf copy is attached. The consultation indicates the project is within the range of small whorled pogonia, and northern long-eared bat.

5. Provide a plan set on 8 1/2 x 11. (a PDF works for me)

A pdf copy is attached.

6. The letter with the application is dated Feb. 6, 2017 but it states the work is planned to start January of 2017. Have they started or is that a typo?

The cover letter included with the Permit by Rule application misstated the start of work. No work has begun on this project.

As conditions allow, CES will coordinate timing of the stream crossing work with Department of Inland Fisheries and Wildlife (DIF&W) and Department of Marine Resources (DMR), with a request to construct the stream crossing outside the July 15th to October 1st window. Construction is anticipated to take approximately nine weeks.

Please contact us if we can provide additional information.

Sincerely,
CES, Inc.

Nathan Gustafson, P.E.
Project Engineer

Johanna E. Szillery, CSS
Senior Project Scientist

NAG/JES
Enc.
cc: MDEP, Dustin Dorr

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
306 HATCHERY ROAD
EAST ORLAND, ME 04431
PHONE: (207)469-7300 FAX: (207)902-1588
URL: www.fws.gov/mainefieldoffice/index.html

Consultation Code: 05E1ME00-2017-SLI-0344 February 23, 2017
Event Code: 05E1ME00-2017-E-00569
Project Name: Auburn Ash landfill forcemain construction

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be
completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC Web site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site:
http://www.fws.gov/mainefieldoffice/Project%20review4.html

Additionally, wind energy projects should follow the wind energy guidelines:
http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm and at:

http://www.towerkill.com; and at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Auburn Ash landfill forcemain construction

Official Species List

Provided by:

Maine Ecological Services Field Office
P. O. BOX A
EAST ORLAND, ME 04431
(207) 469-7300
http://www.fws.gov/mainefieldoffice/index.html

Consultation Code: 05E1ME00-2017-SLI-0344
Event Code: 05E1ME00-2017-E-00569

Project Type: Landfill

Project Name: Auburn Ash landfill forcemain construction
Project Description: The proposed work consists of construction of an approximately 1,525 linear feet of 4-inch diameter HDPE forcemain to connect to the Auburn Water and Sewer District's Moose Brook pump station to the Auburn leachate landfill. The proposed utility corridor will be 30 feet wide. The forecemain begins at the Auburn Ash landfill property, and extends 600 feet to the west, then 900 feet to the northwest to connect to the pump station. Construction of the forcemain project requires crossing Moose Brook with associated wetland complex and an unnamed wetland.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:

Project Coordinates: MULTIPOLYGON (((-70.28140783309938 44.02971343140114, -70.28190135955812 44.029142606511776, -70.28269529342653 44.02878776664756, -70.28321027755739 44.02872605514999, -70.28391838073732 44.030315105738644, -70.28542041778566 44.03202753003749, -70.28499126434328 44.03264460774739, -70.28140783309938 44.02971343140114)))

Project Counties: Androscoggin, ME

Endangered Species Act Species List

There are a total of 2 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Flowering Plants	**Status**	**Has Critical Habitat**	**Condition(s)**
Small Whorled pogonia *(Isotria medeoloides)* Population: Wherever found	Threatened		
Mammals			
Northern long-eared Bat *(Myotis septentrionalis)* Population: Wherever found	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO ATTENTION OF

DRAFT

MAINE GENERAL PERMIT (GP)
AUTHORIZATION LETTER AND SCREENING SUMMARY

City of Auburn
C/o Kristopher Bennett
60 Court Street
Auburn, Maine 04210

CORPS PERMIT # NAE-2017-00552
CORPS GP ID# 17-132
STATE ID# L-

DESCRIPTION OF WORK:

place permanent fill in 810 SF (.01 acres) of wetland and temporary timber mat fill in 4,976 SF (.11 acres) of wetland in conjunction with installing 1,525 linear feet of 4" diameter HDPE force main between the Auburn Water and Sewer District's Moose Brook pump station and the Auburn Leachate Landfill property off Hotel Road Auburn, Maine as shown on the attached plans entitled Auburn Ash Landfill Leachate Force main, Auburn Maine by CES, Inc.in 7 Sheets dated 2/23/2017.
ADDITIONAL CONDITIONS: SEE ATTACHED SHEET

LAT/LONG COORDINATES : 44.02927° N 70.28279° W **USGS QUAD:** Minot, ME

I. CORPS DETERMINATION:
Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine General Permit (GP).** Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed GP carefully, including the GP conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 38 of the GP (page 16) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GP on October 13, 2020. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 13, 2021.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [ ], ISSUED[X], DENIED [ ] DATE

APPLICATION TYPE: PBR__, TIER 1:____, TIER 2 :____, TIER 3: **X**__, LURC: _____ DMR LEASE: _____ NA: _____

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: 3/9/17 LEVEL OF REVIEW: CATEGORY 1:_____ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10_____, 404__X___ 10/404_____, 103_____

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA_NO__, USF&WS_NO__, NMFS_NO__

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Manchester, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://per2.nwp.usace.army.mil/survey.html

RODNEY A. HOWE
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

FRANK J. DEL GIUDICE DATE
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

US Army Corps
of Engineers ®
New England District

PLEASE NOTE THE FOLLOWING ADDITIONAL CONDITIONS FOR
DEPARTMENT OF THE ARMY
GENERAL PERMIT
NO. NAE-2017-00552

1. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.

2. The permittee must still obtain any other Federal, State, or local permits as required by law before beginning work. This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.

3. This authorization requires you to 1) notify us before beginning work so we may inspect the project, and 2) submit a Compliance Certification Form. You must complete and return the enclosed Work Start Notification Form(s) to this office at least two weeks before the anticipated starting date. You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation (but not mitigation monitoring, which requires separate submittals).

4. Please note General Condition 21. Sedimentation and Erosion Control on pages 11and 12 of the attached General Permit.

5. No tree clearing activities shall occur from June 1- July 31 of any given year to minimize the potential effect to the Northern Long eared bat.

6. All areas of any temporary fill associated with cofferdams, timber mats, and construction access roads shall be completely removed upon completion of the project.

DRAWINGS

C101	Site Plan
C201	Plan & Profile Sta 0+00 to 8+25
C202	Plan & Profile Sta 8+25 to 15+75
C501	Site Details
C502	Site Details

AUBURN ASH LANDFILL
LEACHATE FORCEMAIN

AUBURN, ANDROSCOGGIN COUNTY, MAINE

ISSUED FOR CONSTRUCTION
MAY 5, 2017

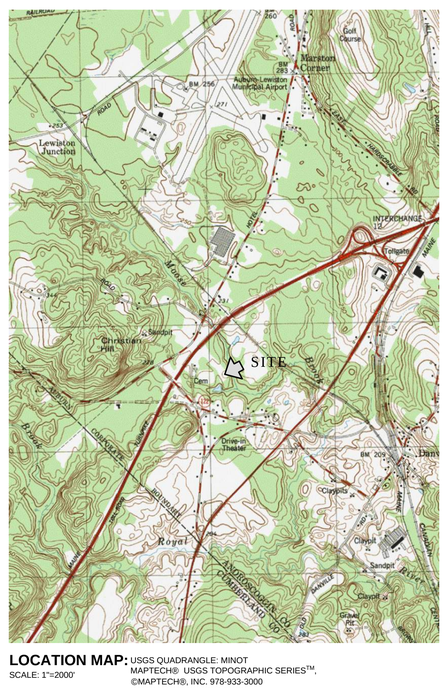
STATE OF MAINE
Nathan Gustafson
13589
5-5-2017
LICENSED PROFESSIONAL ENGINEER

PROJECT LOCATION

INDEX OF DRAWINGS

CIVIL

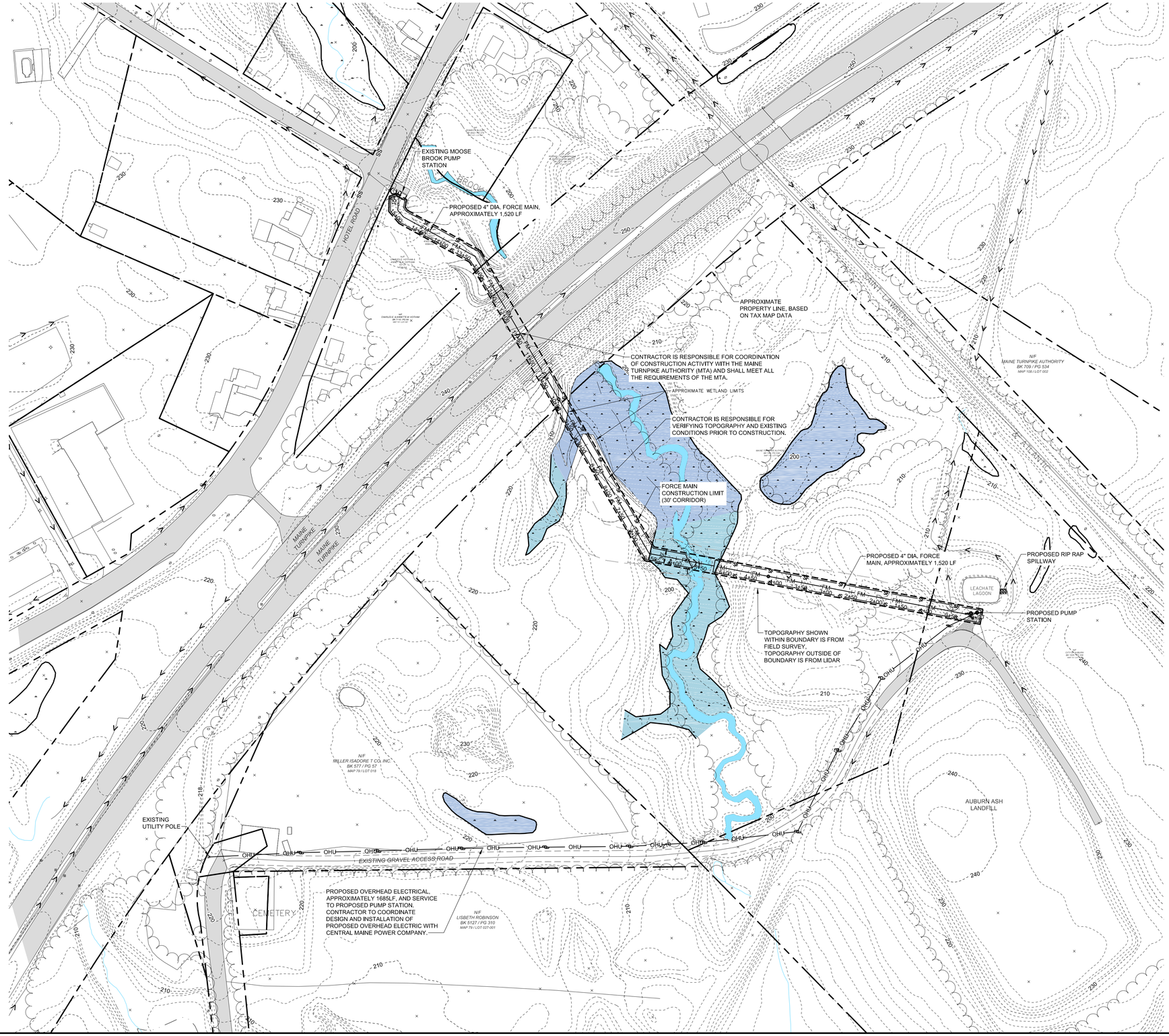
CES INC
ENGINEERS • ENVIRONMENTAL SCIENTISTS • SURVEYORS
465 So. Main Street, P.O. Box 639, Brewer, ME 04412 Tel: 207-989-4824 Fax 207-989-4881
1366 State Highway 102, Bar Harbor, ME 04609 Tel: 207-288-0587 Fax 207-288-0588
61 Dublin Street. P.O. Box 587, Machias, ME 04654 Tel: 207-255-3270 Fax 207-255-8367
549 Main Street, P.O. Box 827, Presque Isle, ME 04769 Tel: 207-764-8412 Fax: 207-764-8414
44 Main Street, Suite 204, Waterville, ME 04903 Tel: 207-680-2202 Fax: 207-680-2204
640 Main Street, Lewiston, ME 04240 Tel: 207-795-6009 Fax: 207-795-6128



LOCATION MAP: USGS QUADRANGLE: MINOT
SCALE: 1"=2000' MAPTECH® USGS TOPOGRAPHIC SERIES™,
©MAPTECH®, INC. 978-933-3000
WWW.MAPTECH.COM/TOPO

SITE LOCATION

CES JN 10473.009



LEGEND:

DESCRIPTION	SYMBOL
UTILITY POLE	
SEWER MANHOLE	
EDGE OF GRAVEL	
CENTERLINE	
MINOR FOOT CONTOUR	98
MAJOR FOOT CONTOUR	100
PROPOSED FORCEMAIN	FM
PROPOSED OVERHEAD UTILITY LINE	OHU
PROPOSED UNDERGROUND UTILITY LINE	UGU
APPROXIMATE PROPERTY LINE	
WETLAND	
APPROXIMATE WETLAND	
FIELD DELINEATED WETLAND	

SOURCE:

1. BASE MAPPING OUTSIDE OF "SURVEYED BOUNDARY" SHOW WAS PROVIDED BY THE CITY OF AUBURN.
2. MAPPING WITHIN SURVEYED BOUNDARY WAS ESTABLISHED BY A FIELD SURVEY BY JONES ASSOCIATES AND PROVIDED IN AUTOCAD FORMAT, FILE NAME: Ash Landfill to CES 7-26-16.

RESOURCE NOTES:

1. NATURAL RESOURCE FIELD SURVEYS WERE COMPLETED ON A PORTION OF THE PROJECT AREA. IN THE REMAINING AREA, DATA ON APPROXIMATE WETLAND AREAS WAS PROVIDED BY THE CITY OF AUBURN.
2. NATURAL RESOURCE FIELD SURVEYS WERE PERFORMED BY CES INC. IN JUNE 2016. WETLAND SURVEYS WERE COMPLETED IN GENERAL ACCORDANCE WITH 1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE 2012 NORTHCENTRAL AND NORTHEAST REGIONAL SUPPLEMENT (VERSION 2.0).
3. STREAMS SHOWN HEREON WERE FIELD IDENTIFIED IN ACCORDANCE WITH NATURAL RESOURCES PROTECTION ACT (NRPA) DEFINITIONS AND BASED ON A FIELD SURVEY PERFORMED BY CES INC. IN JUNE 2016.
4. NATURAL RESOURCE BOUNDARIES WERE LOCATED USING A SUB-METER CAPABLE TRIMBLE GEO XH (6000 SERIES). DATA WAS POST-PROCESSED ACCORDING TO MANUFACTURER'S RECOMMENDED POST-PROCESSING SETTINGS USING CORS REFERENCE STATIONS. UNDER CERTAIN CONDITIONS, THE POSITIONAL ERROR OF THE GPS DATA MAY EXCEED SUB-METER. PROPOSED WETLAND IMPACTS SHOULD BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION.

Waterville
45 Eisenhower Drive
Suite 204
Waterville, ME
T: 207-680-2202
F: 207-680-2204

Lewiston
640 Main Street
Lewiston, ME
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F: 207-795-6128

Presque Isle
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PO Box 927
Presque Isle, ME
T: 207-764-4474
F: 207-764-8414

Bar Harbor
1386 State Hwy 102
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F: 207-288-0588

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T: 207-989-4824
F: 207-989-4881

Machias
61 Dublin Street
PO Box 587
Machias, ME
T: 207-255-3270
F: 207-255-8367

CES INC
Engineers • Environmental Scientists • Surveyors

PROJECT TITLE
AUBURN ASH LANDFILL LEACHATE FORCE MAIN
AUBURN, MAINE

SHEET TITLE
SITE PLAN

NO.	DESCRIPTION	DATE	DRAWN BY
R2			
R1			

ISSUE STATUS
FOR CONSTRUCTION

STATE OF MAINE
Nathan Gustafson
13589
5-5-2017
LICENSED PROFESSIONAL ENGINEER

SCALE	1"=100'
DATE	2017-05-05
DRAWN BY	BLQ
CHECKED BY	NAG/JAS
DESIGNED BY	NAG
APPROVED BY	NAG
JOB NUMBER	10473.009

DRAWING NUMBER
C101

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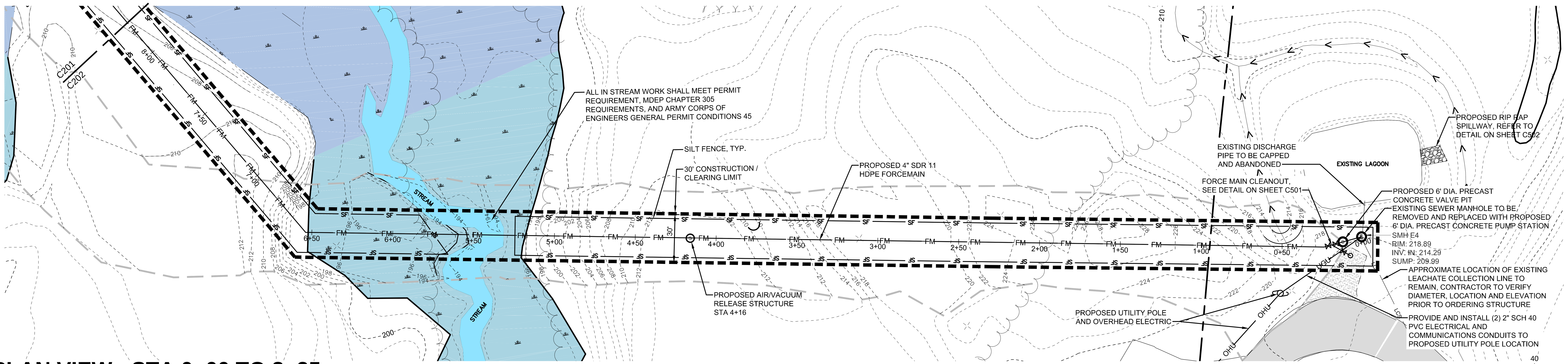
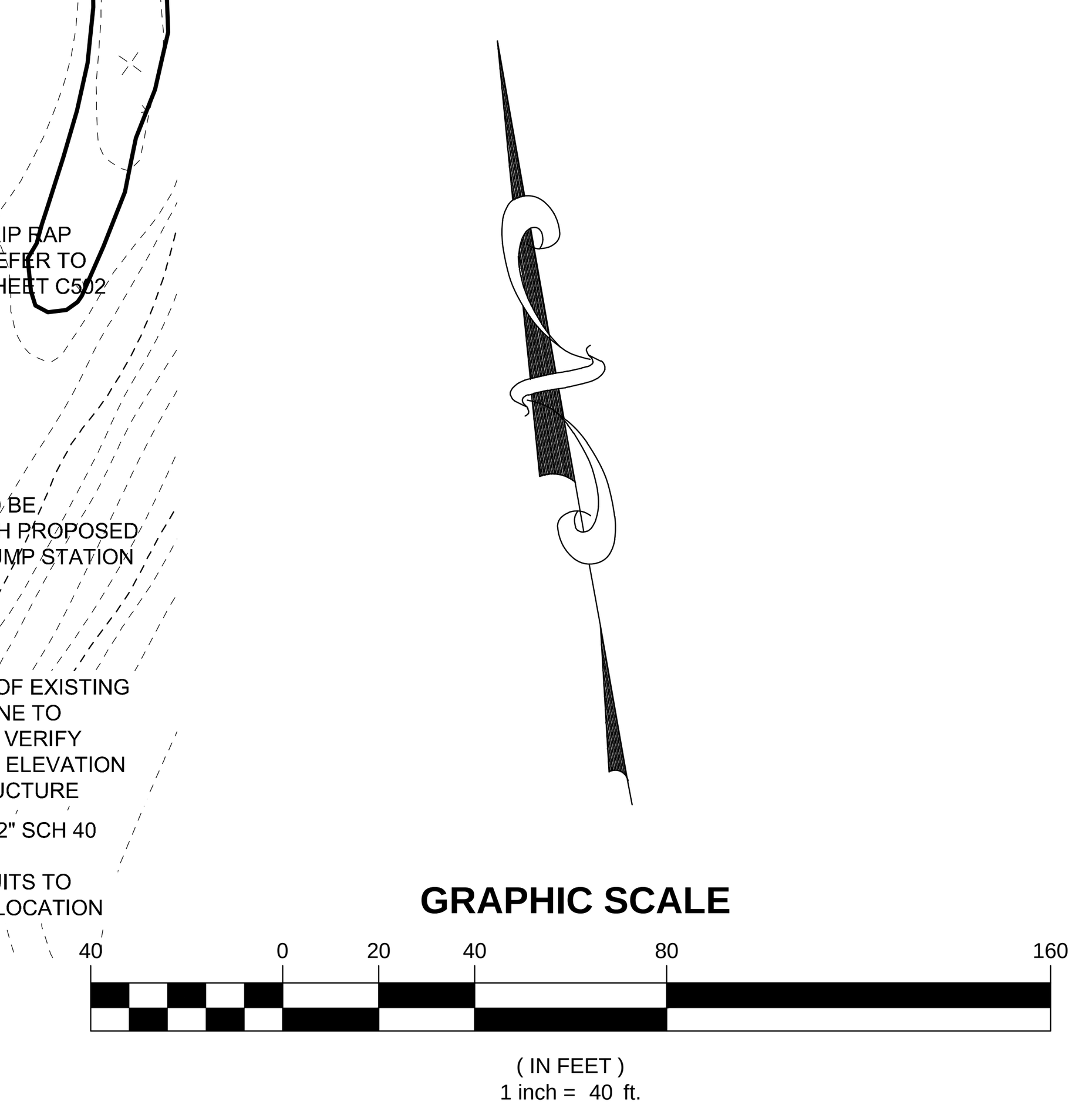
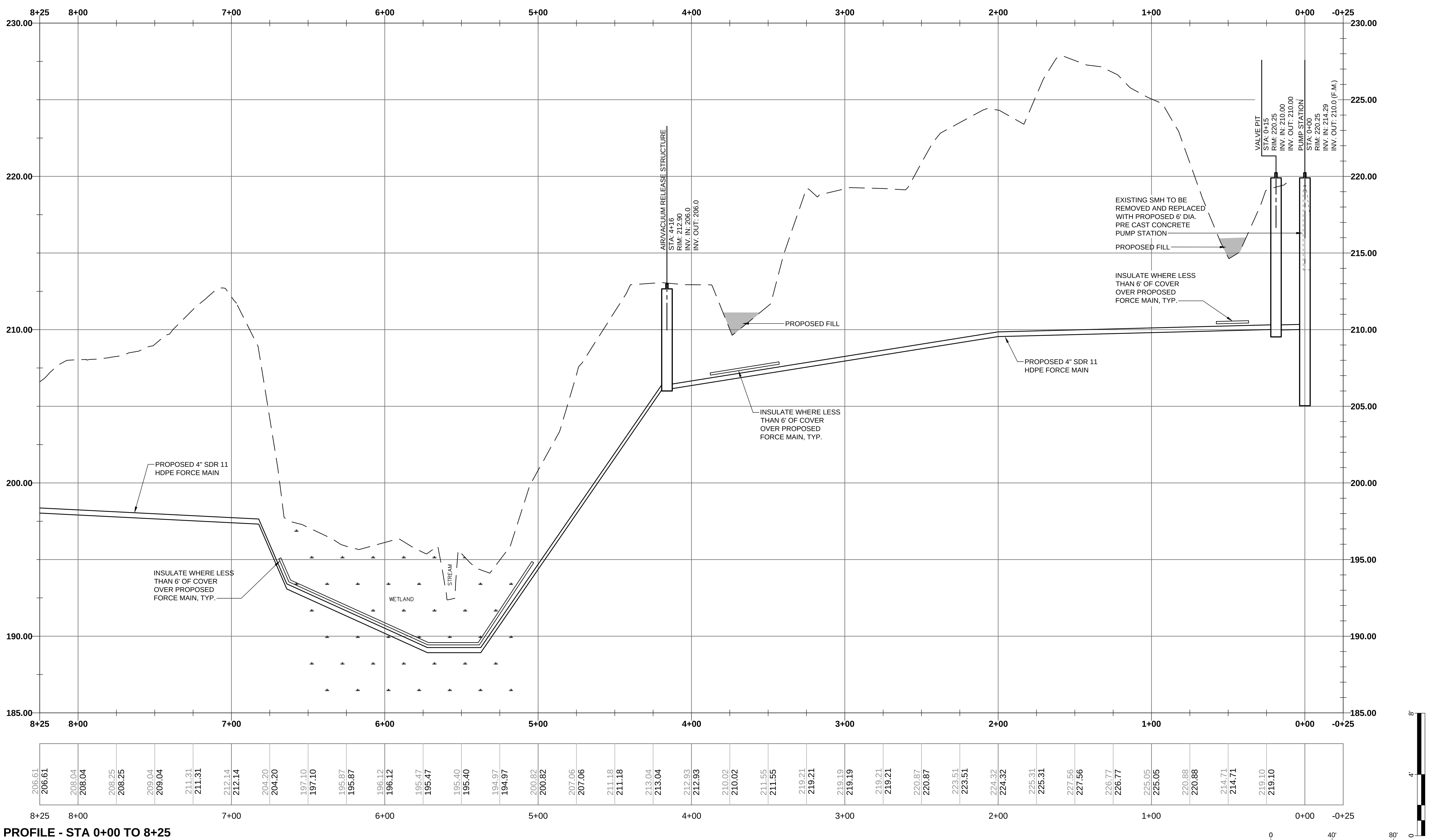




PLAN VIEW - STA 0+00 TO 8+25

SCALE: 1"=40'



PROFILE - STA 0+00 TO 8+25

SCALE: H: 1"=40' / V: 1"=4'

Brewer
465 South Main Street
PO Box 639
Brewer, ME
T 207-989-4824
F 207-989-4881

Presque Isle
549 Main Street
PO Box 827
Presque Isle, ME
T 207-764-8412
F 207-764-8414

Waterville
44 Main Street
Suite 204
Waterville, ME
T 207-680-2202
F 207-680-2204

Machias
61 Dublin Street
PO Box 587
Machias, ME
T 207-255-8270
F 207-255-8267

Bar Harbor
1366 State Hwy 102
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T 207-288-0587
F 207-288-0588

Lewiston
640 Main Street
Lewiston, ME
T 207-795-6009
F 207-795-6128

CES INC
Engineers • Environmental Scientists • Surveyors

PROJECT TITLE: AUBURN ASH LANDFILL LEACHATE FORCE MAIN
AUBURN, MAINE

SHEET TITLE: PLAN AND PROFILE STA 0+00 TO 8+25

REV	DESCRIPTION	DATE	DRAWN BY
R1			
R2			
R3			
R4			
R5			
R6			
R7			

ISSUE STATUS: FOR CONSTRUCTION

STATE OF MAINE
Nathan Gustafson
13589
5-5-2017
LICENSED PROFESSIONAL ENGINEER

SCALE	1"=40'
DATE	2017-05-05
DRAWN BY: BLQ	CHECKED BY: NAG/JAS
DESIGNED BY: NAG	APPROVED BY: NAG
JOB NUMBER	10473.009
DRAWING NUMBER	C201

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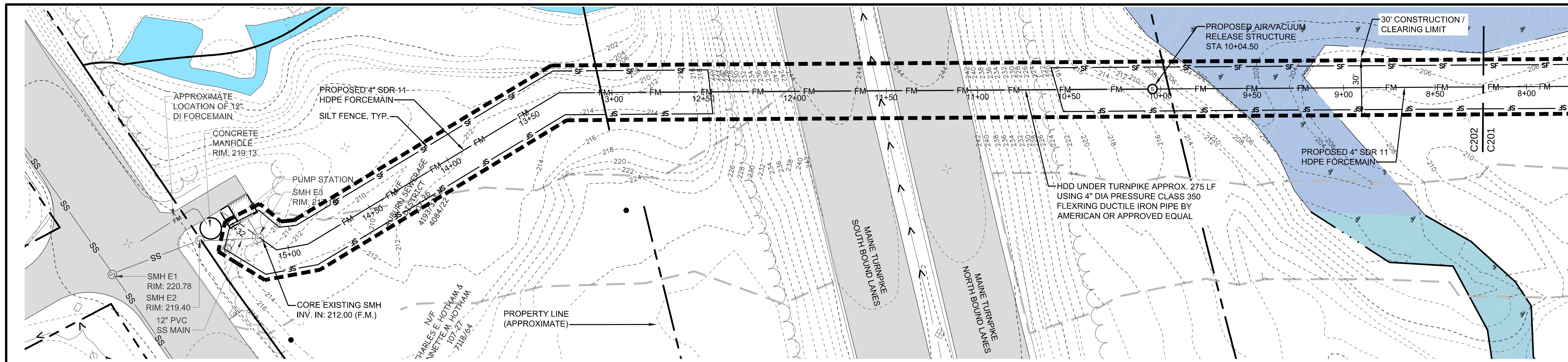
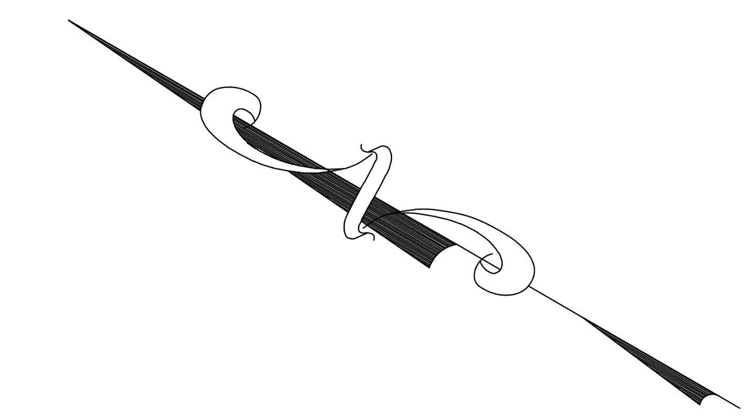


PLAN VIEW - STA 8+25 TO 15+75

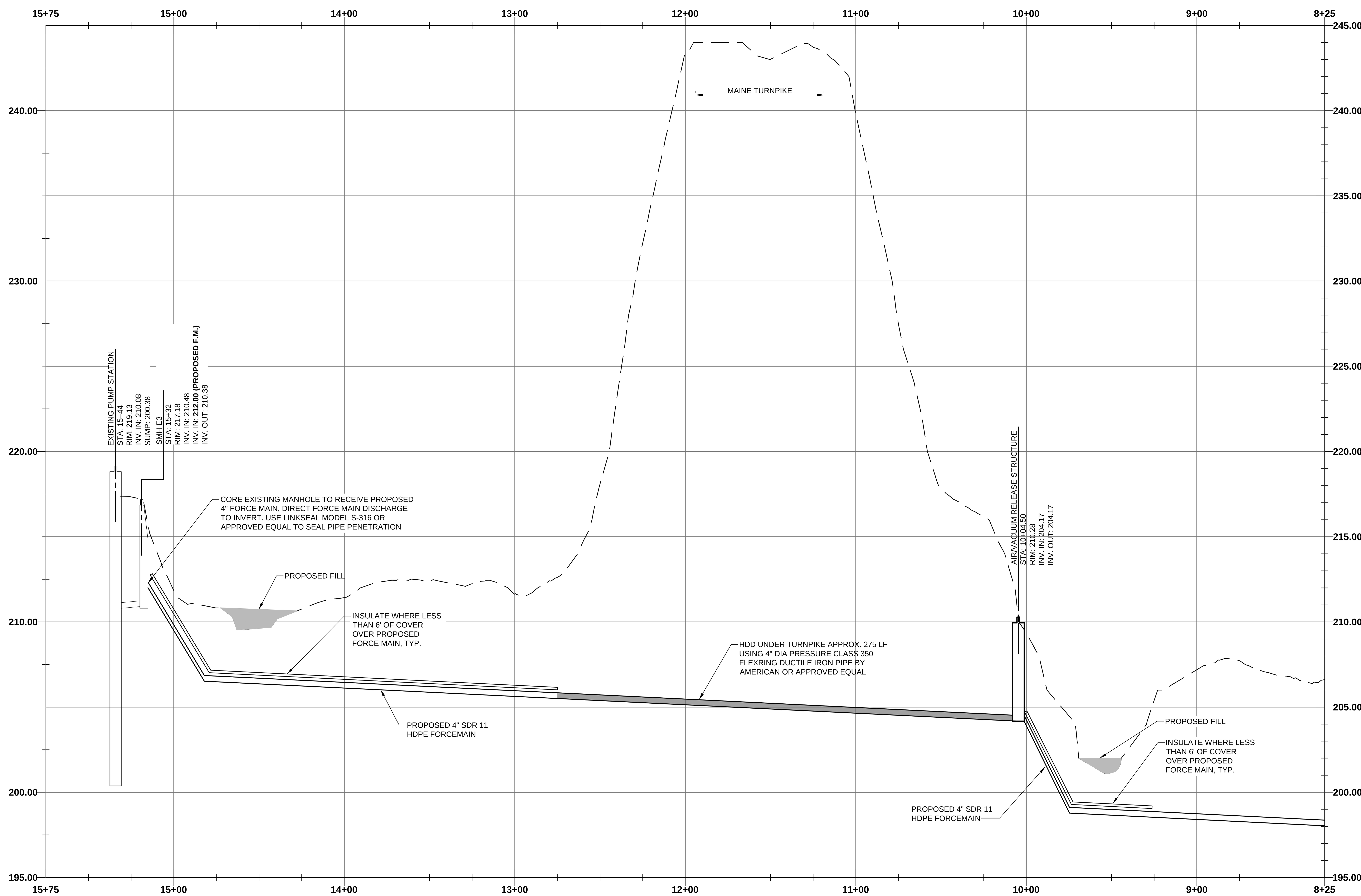
SCALE: 1"=40'



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.



PROFILE - STA 8+25 TO 15+75

SCALE: H: 1"=40' / V: 1"=4'

CES INC
Engineers • Environmental Scientists • Surveyors

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PO Box 587
Machias, ME
T.207-255-3270
F.207-255-8367

Bar Harbor
1366 State Hwy 102
Bar Harbor, ME
T.207-288-0587
F.207-288-0588

Lewiston
640 Main Street
Lewiston, ME
T.207-795-6009
F.207-795-6128

PROJECT TITLE

AUBURN ASH LANDFILL LEACHATE FORCE MAIN
AUBURN, MAINE

SHEET TITLE

PLAN AND PROFILE
STA 8+25 TO 15+75

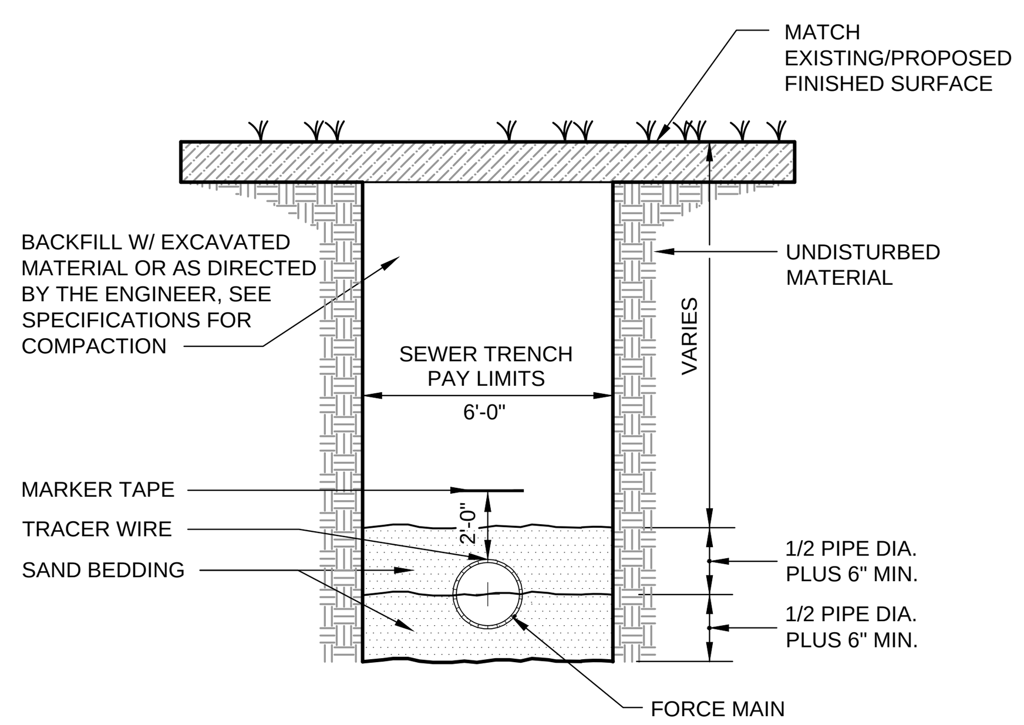
REV.	DESCRIPTION	DATE	DRAWN BY
R1			
R2			
R3			
R4			
R5			
R6			
R7			

ISSUE STATUS

FOR CONSTRUCTION

STATE OF MAINE
Nathan Gustafson
13589
5-5-2017
LICENSED
PROFESSIONAL ENGINEER

SCALE	1"=40'
DATE	2017-05-05
DRAWN BY	BLQ
CHECKED BY	NAG/JAS
DESIGNED BY	NAG
APPROVED BY	NAG
JOB NUMBER	10473.009
DRAWING NUMBER	C202

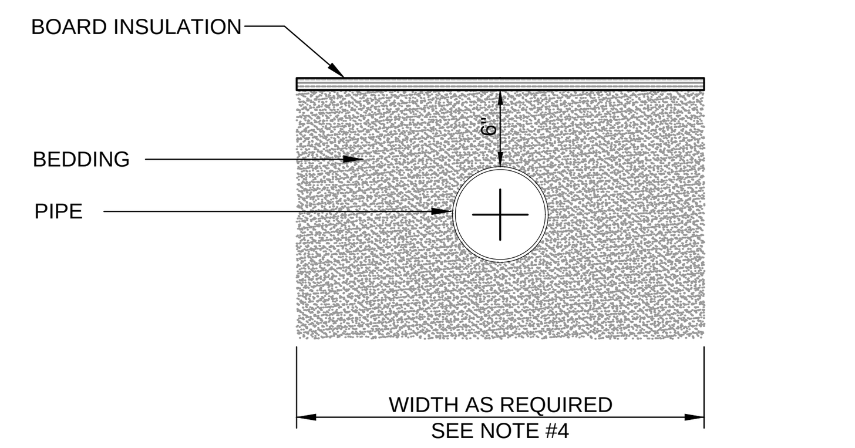


NOTE:

1. MATCH EXISTING SURFACE FINISH, EXCEPT WHERE NOTED. IN LAWN AREAS INSTALL 4" OF LOAM AND SEED AND MULCH.

TYPICAL FORCE MAIN TRENCH DETAIL

N.T.S.

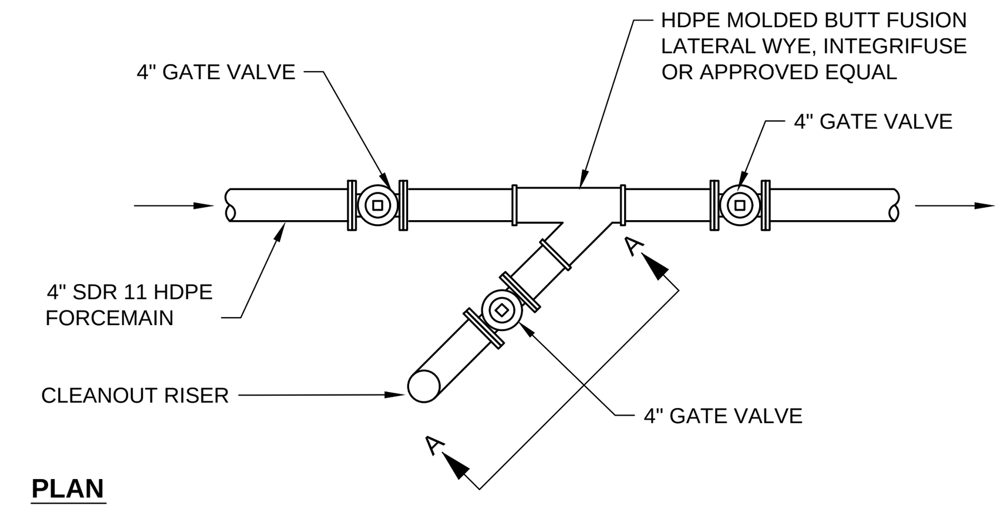


NOTES:

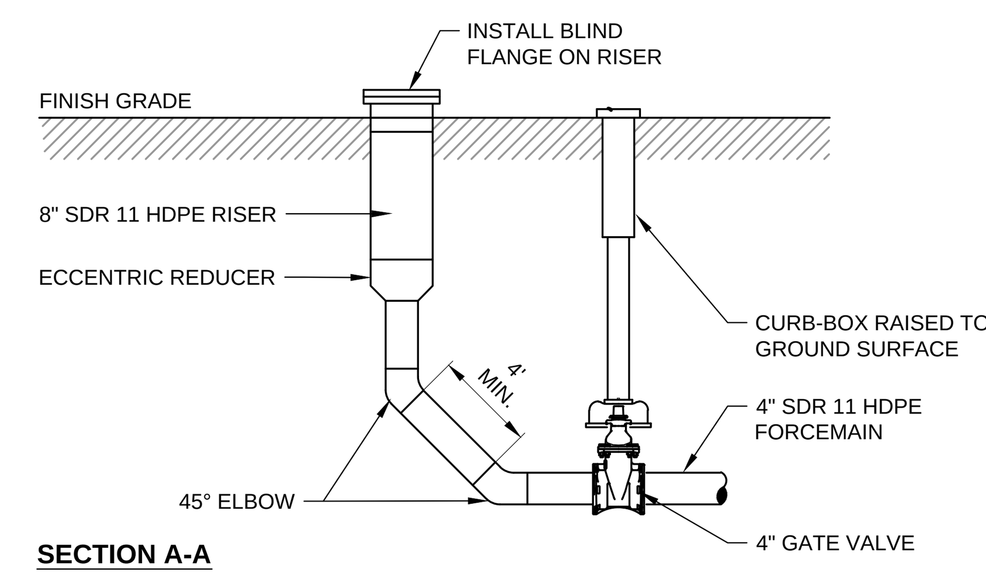
1. FORCEMAIN PIPING SHALL BE INSULATED WITH 2" RIGID INSULATION BLUE BOARD BY DOW CO. SM. EXTRUDED POLYSTYRENE, (OR APPROVED EQUAL) TO BE USED IF EARTHEN COVER IS LESS THAN 6'-0".
2. CONTRACTOR MAY HAVE TO SUPPLY MORE THAN ONE LAYER OF BLUE BOARD INSULATION, IN AREAS THAT HAVE MINIMAL EARTHEN COVER TO MAINTAIN THE INSULATION VALUE OF 6'-0" COVER. 2" BLUE BOARD INSULATION HAS THE INSULATION VALUE OF APPROXIMATELY 1'-6" OF EARTHEN COVER. INSULATE PIPE TO EQUAL 6'-0" OF COVER.
3. MAINTAIN A MINIMUM of 12" OF EARTHEN COVER OVER INSULATION AS A MECHANICAL PROTECTION. LOAM AND SEED AS NECESSARY TO PREVENT EROSION.
4. INSULATION TO BE 2 FEET WIDE FOR PIPES LESS THAN 6 INCHES IN DIAMETER AND 4 FEET WIDE FOR PIPES 6 INCHES IN DIAMETER AND LARGER, OR AS DIRECTED BY THE ENGINEER.
5. CENTER INSULATION OVER PIPES.
6. WHERE EARTHEN COVER IS LESS THAN 3'-0" INSULATE TRENCH WALLS TO BOTTOM OF TRENCH.

TYPICAL TRENCH PIPE INSULATION DETAIL

NTS



PLAN



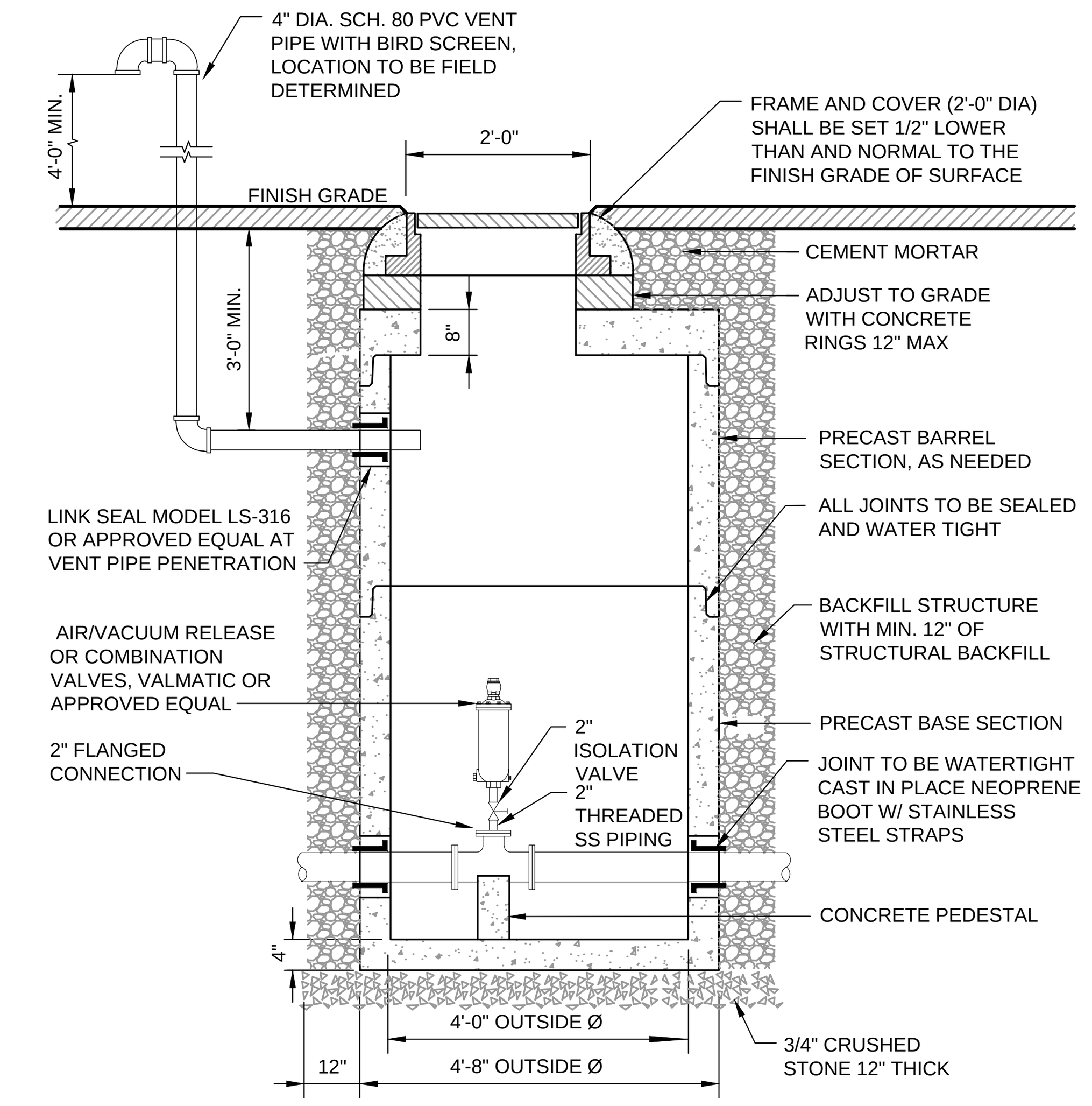
SECTION A-A

NOTES:

1. HDPE FABRICATED LATERAL WYE'S WILL NOT BE ACCEPTED.
2. GATE VALVES SHALL BE MECHANICAL JOINT, AMERICAN FLOW CONTROL SERIES 2500 DUCTILE IRON RESILIENT WEDGE GATE VALVES, OR APPROVED EQUAL.

FORCE MAIN CLEANOUT DETAIL

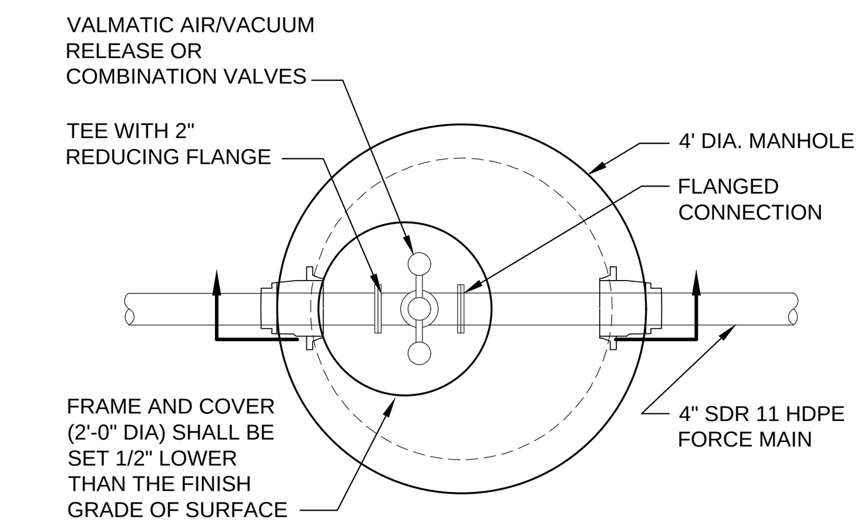
N.T.S.



SECTION

AIR / VACUUM RELEASE MANHOLE DETAIL

N.T.S.



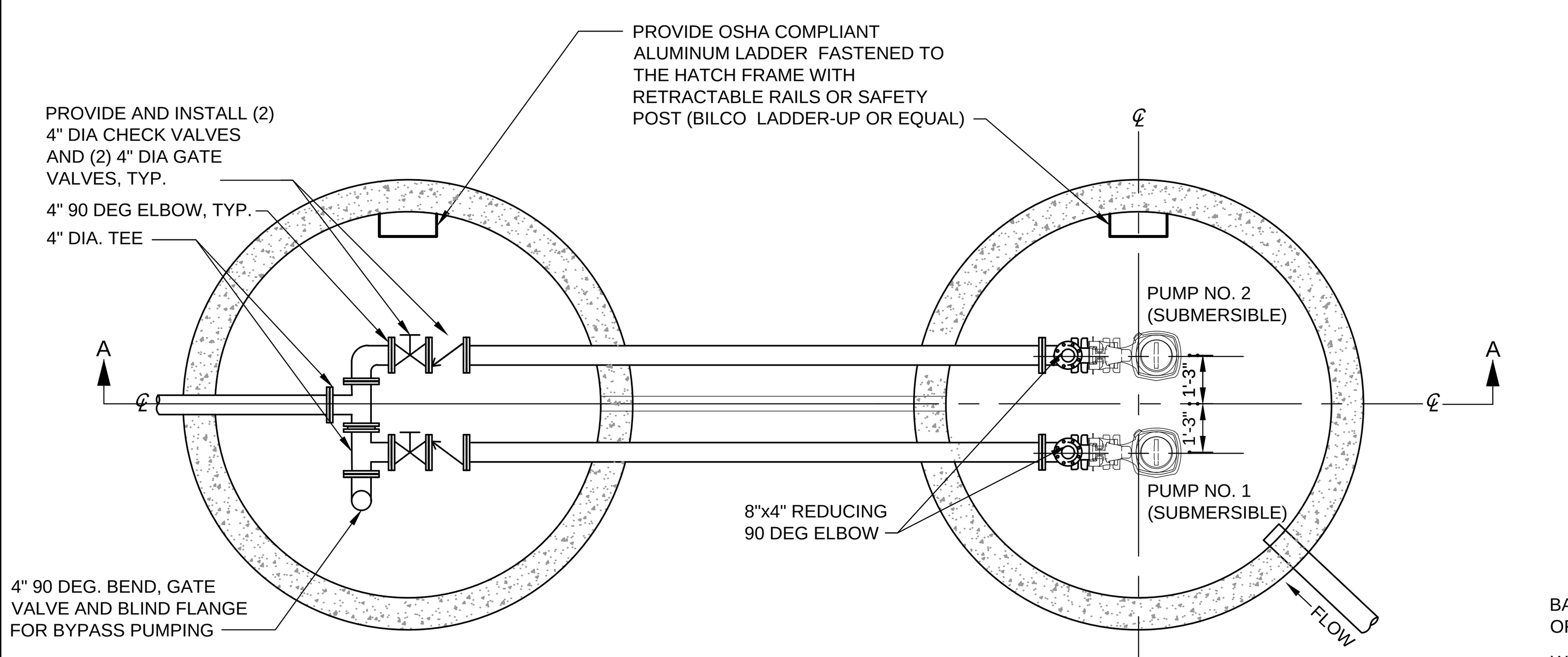
PLAN VIEW

NOTES:

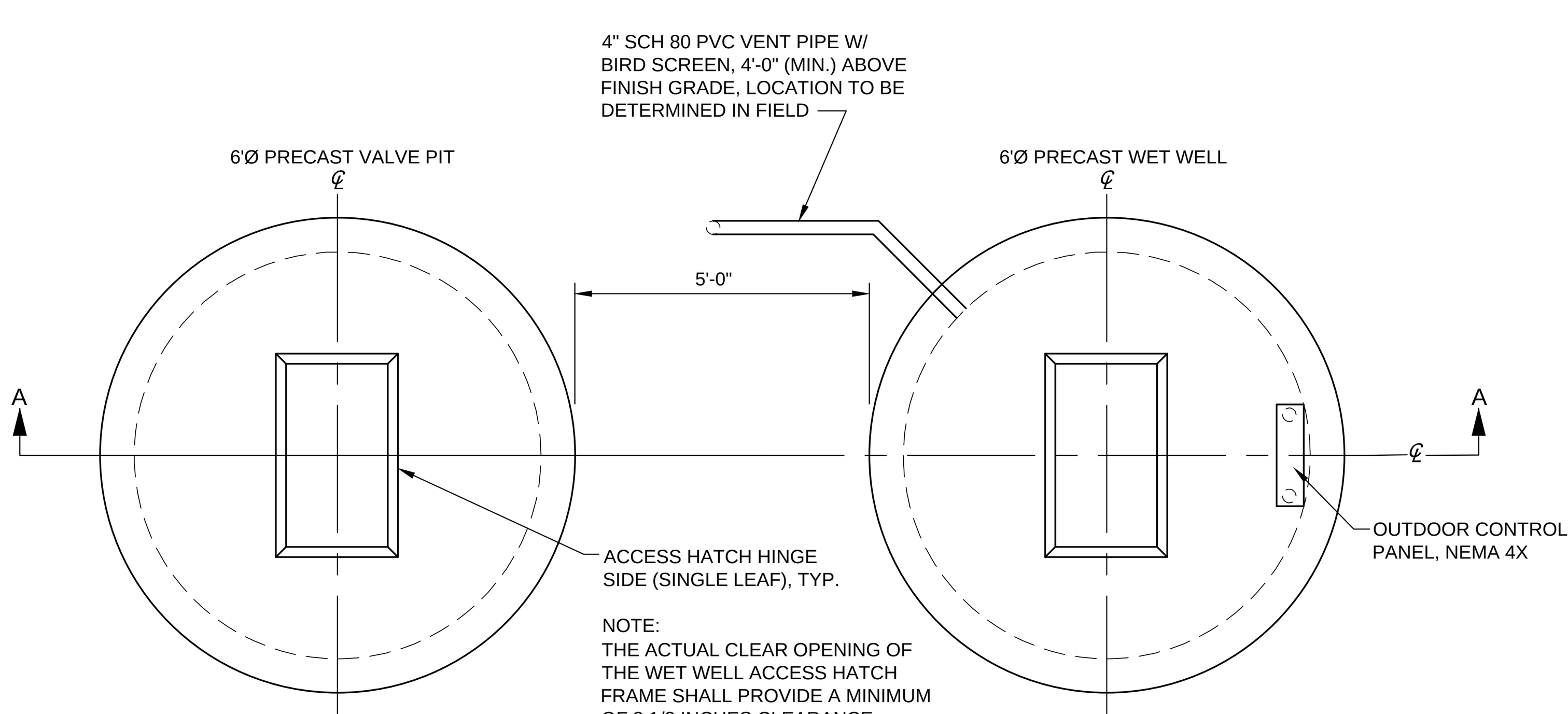
1. ALL AIR/VACUUM RELEASE AND COMBINATION VALVES TO BE PROVIDED FLUSHING HOSE AND CONNECTIONS.
2. ALL AIR/VACUUM RELEASE/COMBINATION VALVE PIPING AND FITTINGS TO BE SCH. 40 316 SS.
3. EACH AIR/VACUUM RELEASE/COMBINATION VALVE SHALL HAVE AN ISOLATION VALVE. ISOLATION VALVES SHALL BE WATTS SERIES S-FBV-1, 2 PIECE, FULL PORT, STAINLESS STEEL BALL VALVES, OR APPROVED EQUAL.
4. ALL AIR/VACUUM RELEASE AND COMBINATION VALVES SHALL BE INSTALLED AND SUPPORTED PER MANUFACTURER'S RECOMMENDATION.

VALVE TABLE

F.M. AIR/VACUUM RELEASE STRUCTURE	SIZE	#301A WW AIR/VACUUM VALVE	#48A/301A WW COMBINATION VALVE
STA 4+16	1"		X
STA 10+04.50	1"	X	



PLAN - WITHOUT TOP SLAB

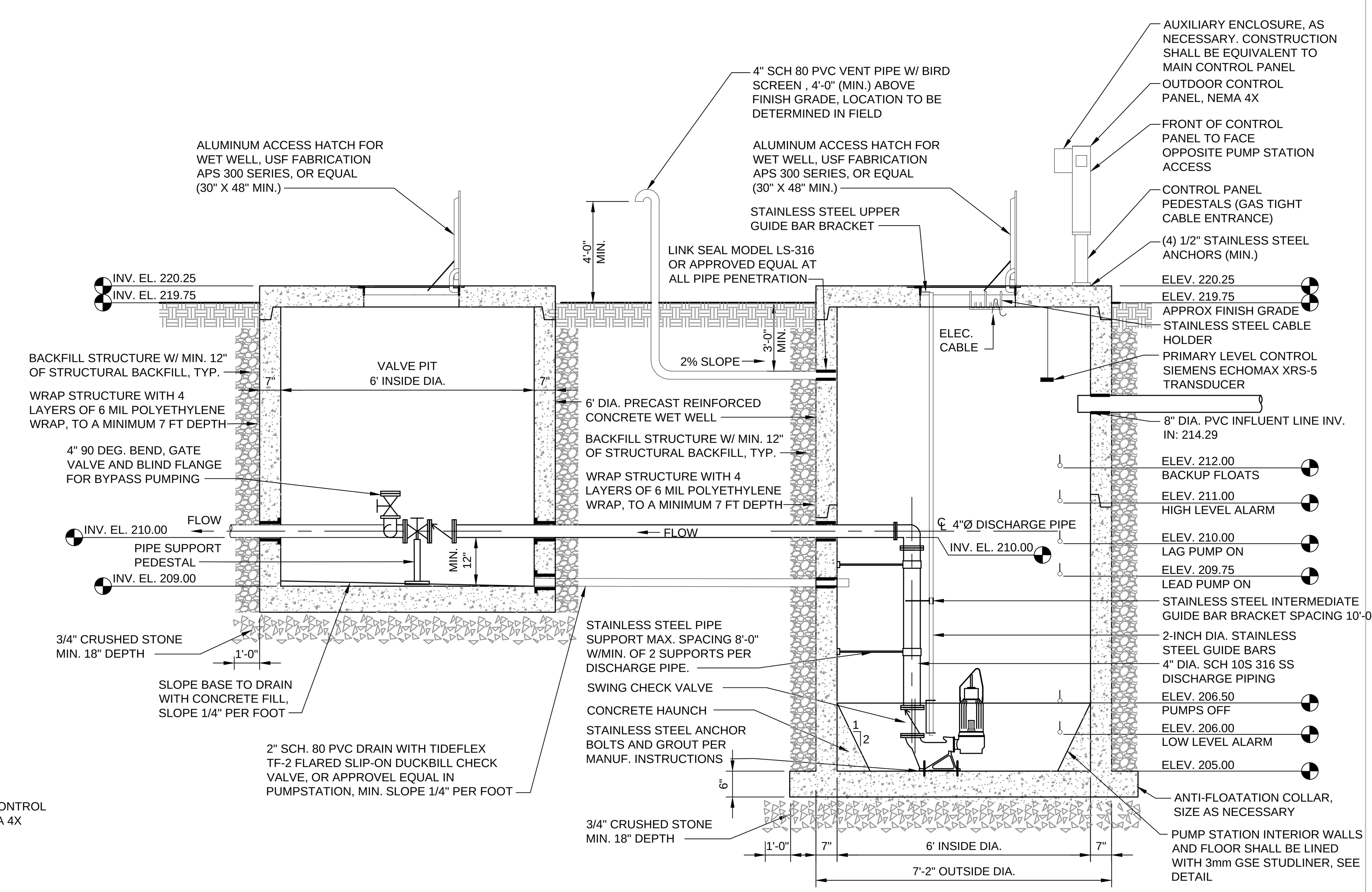


NOTE:
THE ACTUAL CLEAR OPENING OF THE WET WELL ACCESS HATCH FRAME SHALL PROVIDE A MINIMUM OF 3 1/2 INCHES CLEARANCE BEHIND THE PUMP OPPOSITE THE DISCHARGE AND A MINIMUM OF 2 1/2 INCHES CLEARANCE ON THE SIDE OF THE PUMP.

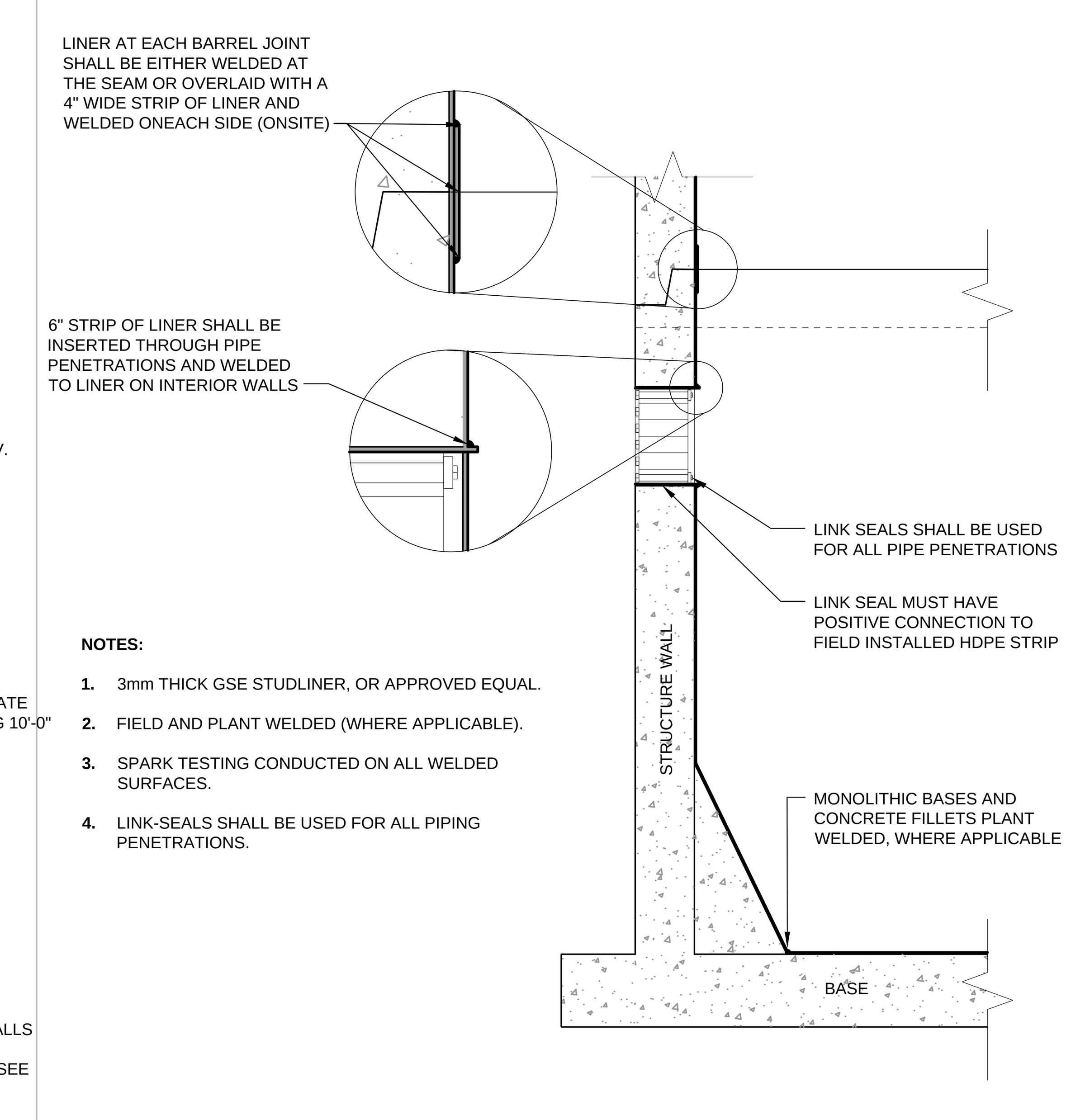
PLAN - WITH TOP SLAB

PUMP STATION DETAIL

N.T.S.



SECTION A-A



NOTES:

1. 3mm THICK GSE STUDLINER, OR APPROVED EQUAL.
2. FIELD AND PLANT WELDED (WHERE APPLICABLE).
3. SPARK TESTING CONDUCTED ON ALL WELDED SURFACES.
4. LINK-SEALS SHALL BE USED FOR ALL PIPING PENETRATIONS.

HDPE LINER INSTALLATION DETAIL

N.T.S.

Waterville
44 Main Street
Suite 204
Waterville, ME
T: 207-680-2202
F: 207-680-2204

Presque Isle
549 Main Street
PO Box 827
Presque Isle, ME
T: 207-764-8412
F: 207-764-8414

Brewer
465 South Main Street
PO Box 639
Brewer, ME
T: 207-989-4824
F: 207-989-4881

Lewiston
640 Main Street
Lewiston, ME
T: 207-795-6009
F: 207-795-6128

Bar Harbor
1366 State Hwy 102
Bar Harbor, ME
T: 207-288-0587
F: 207-288-0588

Machias
81 Dublin Street
PO Box 587
Machias, ME
T: 207-255-8270
F: 207-255-8267

CES INC
Engineers • Environmental Scientists • Surveyors

PROJECT TITLE
AUBURN ASH LANDFILL LEACHATE FORCE MAIN
AUBURN, MAINE

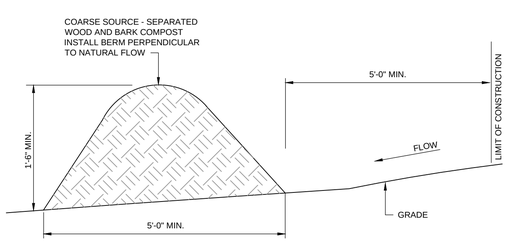
SHEET TITLE
DETAILS

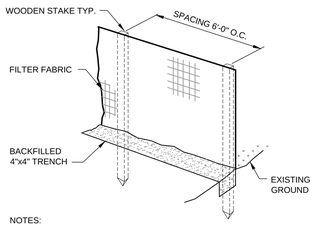
REV	DESCRIPTION	DATE	DRAWN BY
R1			
R2			
R3			
R4			
R5			
R6			
R7			

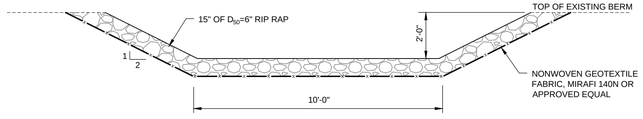
ISSUE STATUS
FOR CONSTRUCTION

STATE OF MAINE
Nathan Gustafson
13589
5-5-2017
LICENSED
PROFESSIONAL ENGINEER

SCALE	NOT TO SCALE		
DATE	2017-05-05		
DRAWN BY	BLQ	CHECKED BY	NAG/JAS
DESIGNED BY	NAG	APPROVED BY	NAG
JOB NUMBER	10473.009		
DRAWING NUMBER	C501		







GENERAL CONSTRUCTION NOTES

1. THIS PROJECT GENERALLY CONSISTS OF THE INSTALLATION OF A PUMP STATION AND CROSS COUNTRY FORCEMAIN TO DISCHARGE THE LANDFILL LEACHATE TO THE WASTEWATER COLLECTION SYSTEM. THE WORK SHALL CONSIST OF THE FOLLOWING: INSTALLATION OF APPROXIMATELY 1,520 LF OF 4" DIAMETER FORCEMAIN AND THE INSTALLATION OF A PUMP STATION AND OTHER RELATED WORK. PROVIDE ALL REQUIRED FITTINGS, MECHANICAL JOINT RETAINER GLANDS, AND OTHER APPURTENANCES AS OUTLINED IN THE PLANS AND SPECIFICATIONS. PROVIDE ALL SURFACE RESTORATION, EROSION CONTROL, TRAFFIC CONTROL AND OTHER WORK AS SPECIFIED OR APPURTENANT.
2. CONTRACTOR TO PROVIDE OWNER AND ENGINEER WITH A WORK PLAN OUTLINING THE WORK SCHEDULE, TRAFFIC CONTROL PLAN, AND WORK AREA BARRICADING PLAN TO BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING A PRE-CONSTRUCTION VIDEO OF THE PROJECT AREA. COST SHALL BE INCIDENTAL TO THE PROJECT. CONTRACTOR TO PROVIDE A COPY OF THE VIDEO TO THE OWNER AND ENGINEER PRIOR TO THE START OF WORK.
4. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION WITH THE CITY OF AUBURN, THE MAINE TURNPIKE AUTHORITY, UTILITY COMPANIES, DIG SAFE, EMERGENCY SERVICES, PAN AM RAILWAYS AND MAINE DEPARTMENT OF TRANSPORTATION (MDOT) WHERE APPLICABLE. CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO COMMENCING WORK TO ALLOW SUFFICIENT TIME TO LOCATE AND MARK THE LOCATION OF ALL BURIED UTILITIES. CONTRACTOR SHALL ALSO CONTACT "DIG SAFE", TELEPHONE NO 811 OR 888-DIG-SAFE. REPAIR OF ANY DAMAGED UTILITY WILL BE INCIDENTAL TO THIS PROJECT
5. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IN WRITING OF ANY CONDITION OR OCCURRENCE THAT REPRESENTS A CHANGE IN PROJECT SCOPE. VERBAL NOTIFICATION IS REQUIRED PRIOR TO PROCEEDING WITH THE WORK OF THE PROJECT AND WRITTEN NOTIFICATION MUST BE PROVIDED. REQUESTS FOR FEE ADJUSTMENTS WILL NOT BE CONSIDERED UNLESS PROPER NOTICE IS GIVEN
6. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS AS REQUIRED TO PERFORM THE WORK AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE APPLICABLE FEDERAL, STATE AND LOCAL CODES.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION.
8. THE CONTRACTOR SHALL SUPERVISE AND INSPECT THE WORK OF THIS PROJECT IN AN EFFICIENT AND COMPETENT MANNER. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO COMPLETE THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE WORK IS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. A REPRESENTATIVE OF THE GENERAL CONTRACTOR SHALL BE PRESENT DURING ALL PHASES OF THE WORK.
9. SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. PERFORM ALL WORK IN ACCORDANCE WITH SAFETY STANDARDS OF APPLICABLE LAWS, BUILDING AND CONSTRUCTION CODES, THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" PUBLISHED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AND THE REQUIREMENTS OF TITLE 9 OF THE CODE OF FEDERAL REGULATIONS, PART 1926, "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION".
10. THE LOCATIONS OF ALL PROPERTY LINES AND RIGHT OF WAYS ARE APPROXIMATE (SHOWN FOR REFERENCE ONLY), UNLESS NOTED OTHERWISE. PROPERTY LINES AND RIGHT OF WAYS SHOWN ARE NOT INTENDED TO REPRESENT LEGAL BOUNDARIES.
11. THE LOCATION, TYPE AND SIZE OF EXISTING PIPES, DUCTS, CONDUITS AND OTHER UNDERGROUND STRUCTURES SHOWN ON THE DRAWINGS ARE NOT WARRANTED TO BE EXACT NOR IS IT WARRANTED THAT ALL UNDERGROUND STRUCTURES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY ALL UTILITY LOCATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. DEPTH OF SERVICES ARE UNKNOWN AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR. EXCAVATING TEST PITS AS NECESSARY TO VERIFY UTILITY LOCATIONS AND DEPTHS SHALL BE INCIDENTAL TO THIS PROJECT.
12. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING TOPOGRAPHY AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING PIPE SIZES, INVERTS, AND LOCATIONS, AND SHALL INCLUDE IN SUBMITTAL PRIOR TO ORDERING.
14. LAYOUT OF THE PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE APPROVED BY THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL GRADE AND LAYOUT CONTROL. LAYOUT SHOULD BE PERFORMED WITH SURVEY EQUIPMENT AND OVERSEEN BY A LICENSED SURVEYOR. A CAD FILE WILL BE AVAILABLE TO THE CONTRACTOR.
15. THE WORK SHALL INCORPORATE EROSION CONTROL MEASURES WHICH ARE COMPLIANT WITH THE LATEST VERSION OF "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES".
16. CONTRACTOR SHALL BE REQUIRED TO PROVIDE DUST CONTROL FOR PROJECT WHICH CAN INCLUDE, BUT IS NOT LIMITED TO, WATER AND CALCIUM CHLORIDE. COST IS INCIDENTAL TO THE PROJECT.
17. RESTRICT ACCESS TO THE PROJECT AREA THROUGH THE USE OF APPROPRIATE SIGNAGE, GATES, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURES IN PLACE DURING NON-WORKING HOURS. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS. SITE SAFETY IS THE RESPONSIBILITY OF CONTRACTOR, DURING BOTH WORKING AND NON-WORKING HOURS.
18. HOURS FOR THE PROJECT WILL BE MONDAY THROUGH FRIDAY, FROM 7:00 AM TO 7:00 PM, UNLESS OTHERWISE AUTHORIZED BY THE OWNER.
19. CONTRACTOR SHALL PERFORM ALL CONSTRUCTION ACTIVITIES RELATED TO THE PROJECT WITHIN THE CONFINES OF THE RIGHT OF WAY OF THE STREETS AND UTILITY EASEMENTS. ANY ACTIVITY, MATERIAL STORAGE ETC., TAKING PLACE ON PRIVATE PROPERTY SHALL BE WITH THE EXPRESS WRITTEN PERMISSION OF THE OWNER AND PROPERTY OWNER AND COORDINATED WITH THE OWNER. WORK OUTSIDE OF THESE LIMITS MAY BE REQUIRED. THE OWNER WILL COORDINATE SECURING EASEMENTS FOR THIS WORK.
20. DO NOT PARK, IMPEDE ACCESS TO, OR STORE EQUIPMENT ON ADJACENT CITY OR PRIVATELY OWNED LOTS, UNLESS PERMISSION HAS BEEN GRANTED IN WRITING BY CITY AND/OR LAND OWNER.
21. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT EQUIPMENT FLUIDS FROM REACHING ANY WATER COURSE. ANY INADVERTENT FLUID DISCHARGES SHALL BE IMMEDIATELY CLEANED FROM THE WATERS USING WHATEVER MEANS NECESSARY, AS DETERMINED BY THE ENGINEER.
22. THE PROPOSED FORCEMAIN WILL HAVE A MINIMUM 6.0 FEET OF COVER UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER.
23. THE CONTRACTOR SHALL PROVIDE THRUST BLOCKS AT ALL TEES AND BENDS IN THE PROPOSED FORCEMAIN UNLESS NOTED OTHERWISE.
24. CONTRACTOR SHALL BACKFILL TRENCH FOLLOWING EACH DAYS CONSTRUCTION. NO OPEN TRENCHES WILL BE ALLOWED OVERNIGHT UNLESS APPROVED BY ENGINEER AND PROPERLY BARRICADED (IE. SNOW FENCING, CHAIN LINK FENCING, JERSEY BARRIER OR APPROVED EQUAL. CAUTION RIBBON AND EQUIPMENT PLACEMENT WILL NOT BE APPROVED AS BARRICADING. CONTRACTOR IS RESPONSIBLE TO MAINTAIN TRENCH AS DIRECTED BY THE ENGINEER
25. ALL FINISH SURFACES SHALL BE INSTALLED TO PROMOTE POSITIVE DRAINAGE. IN NO WAY SHALL THE NEW FINISH SURFACES CREATE DRAINAGE PROBLEMS THAT DID NOT EXIST PRIOR TO CONSTRUCTION.
26. RESTORE ALL AREAS DISTURBED BY CONTRACTORS OPERATION TO ORIGINAL CONDITIONS (GRAVEL, PAVEMENT, GRASS, CURB, ETC.) UNLESS NOTED OTHERWISE ON THE PLANS. RESTORATION OF ROADS, CURBS, PARKING SURFACES AND LAWNS DAMAGED BY THE CONTRACTOR SHALL BE INCIDENTAL TO THE PROJECT.
27. CONTRACTOR SHALL INSTALL 4" OF LOAM, AND SEED AND MULCH ALL VEGETATED AREAS DISTURBED DUE TO CONSTRUCTION. SEEDING SHALL MEET REQUIREMENTS OF MAINE DOT "SEEDING METHOD NUMBER 2 (MDOT 618.14). COST SHALL BE INCIDENTAL TO PROJECT.
28. ALL MATERIALS SCHEDULED FOR REMOVAL SHALL BE DISPOSED OF IN A LEGAL MANNER BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE OWNER HAS THE FIRST RIGHT AND REFUSAL FOR ANY DEMOLITION MATERIALS.
29. UNLESS OTHERWISE NOTED, RIM ELEVATIONS FOR PROPOSED STRUCTURES SHALL BE FIELD ADJUSTED TO FINISHED GRADES IN ACCORDANCE WITH DETAILS.
30. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT WILL BE RESET AT THE CONTRACTOR'S EXPENSE, BY A REGISTERED LAND SURVEYOR APPROVED BY THE ENGINEER.
31. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A WORK PERMIT FROM THE MAINE TURNPIKE AUTHORITY (MTA) AND SHALL COORDINATE ALL WORK ADJACENT TO THE TURNPIKE WITH THE MTA. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL REQUIREMENTS OF THE MTA WORK PERMIT.
32. STREAM CROSSING ACTIVITY OCCURRING BETWEEN OCTOBER 2 AND JULY 14 MUST BE APPROVED BY MAINE DEPARTMENT OF INLAND FISH AND WILDLIFE AND DEPARTMENT OF MARINE RESOURCES.
33. ALL IN-STREAM WORK MUST BE IN ACCORDANCE WITH PERMIT REQUIREMENTS, MDEP CHAPTER 305 REQUIREMENTS, AND ARMY CORPS OF ENGINEERS GENERAL PERMIT (2015) GENERAL CONDITIONS 45.
34. THE OWNER REQUIRED THAT UPON COMPLETION, A COMPLETE SET OF "AS BUILT" DRAWINGS BE SUBMITTED TO THE CITY OF AUBURN. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL (CAD) DRAWING AND HARD COPY FORMAT. A CAD FILE WILL BE AVAILABLE FOR THE CONTRACTOR. AS-BUILT DRAWINGS SHALL INCLUDE GPS LOCATIONS OF THE FORCE MAIN, FITTINGS, VALVES, STRUCTURES AND APPURTENANCES. GPS LOCATIONS OF THE FORCE MAIN SHALL BE PROVIDED AT NO GREATER THAN 50 FOOT INTERVALS.

EROSION CONTROL NOTES

1. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENTATION CONTROL BMPS, PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION.
2. SILT FENCE WILL BE INSPECTED, REPLACED AND/OR REPAIRED IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR LOSS OF SERVICEABILITY DUE TO SEDIMENT ACCUMULATION. AT A MINIMUM, ALL EROSION CONTROL DEVICES WILL BE OBSERVED WEEKLY.
3. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO CONSTRUCTION SITE.
4. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE STABILIZED BY A SUITABLE GROWTH OF GRASS. ONCE A SUITABLE GROWTH OF GRASS HAS BEEN OBTAINED, ALL TEMPORARY EROSION CONTROL ITEMS SHALL BE REMOVED BY THE CONTRACTOR. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THEY ARE REMOVED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED, SEEDED, AND MULCHED IMMEDIATELY.
5. ALL DISTURBED AREAS WILL BE SEEDED WITH 2.5 LBS. RED FESCUE AND 0.5 LBS. RYE GRASS PER 1,000 SQUARE FEET AND MULCHED AT A RATE OF 90 LBS. PER 1,000 SQUARE FEET OR EQUIVALENT APPLICATION OF SEED AND MULCH.
6. A SUITABLE BINDER SUCH AS CURASOL OR TERRTACK WILL BE USED ON THE HAY MULCH FOR WIND CONTROL.
7. IF FINAL SEEDING OF DISTURBED AREAS IS NOT COMPLETED BY SEPTEMBER 15th OF THE YEAR OF CONSTRUCTION, THEN ON THAT DATE THESE AREAS WILL BE GRADED AND SEEDED WITH WINTER RYE AT THE RATE OF 112 POUNDS PER ACRE OR 3 POUNDS PER 1000 SQUARE FEET. THE RYE SEEDING WILL BE PRECEDED BY AN APPLICATION OF 3 TONS OF LIME AND 800 LBS. OF 10-20-20 FERTILIZER OR ITS EQUIVALENT. MULCH WILL BE APPLIED AT A RATE OF 90 POUNDS PER 1000 SQUARE FEET.
8. IF THE RYE SEEDING CANNOT BE COMPLETED BY OCTOBER 1st OR IF THE RYE DOES NOT MAKE ADEQUATE GROWTH BY DECEMBER 1st, THEN ON THOSE DATES, HAY MULCH WILL BE APPLIED AT 150 POUNDS PER 1000 SQUARE FEET.
9. INTERIOR SILT FENCES ALONG CONTOUR DIVIDING FLAT AND STEEP SLOPES, AREAS WITH DIFFERENT DISTURBANCE SCHEDULES, AROUND TEMPORARY STOCKPILES OR IN OTHER UNSPECIFIED POSSIBLE CIRCUMSTANCES SHOULD BE CONSIDERED BY THE CONTRACTOR. THE INTENT OF SUCH INTERIOR SILT FENCES IS TO LIMIT SEDIMENT TRANSPORT WITHIN THE SITE TOWARD THE PROTECTED CATCH BASIN INLETS TO MINIMIZE SEDIMENT REMOVAL REQUIRED BY THE EROSION CONTROL NOTE 9 PROTECTIONS AND EXTEND LIFE OF SUCH DEVICES.
10. THE CONTRACTOR SHALL PROVIDE A SEDIMENT BASIN FOR ALL WATER PUMPED FROM EXCAVATIONS. BASIN SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES". THE CONTRACTOR SHALL SUBMIT FOR REVIEW/APPROVAL PRIOR TO BEGINNING ANY PROJECT WORK.
11. CONSTRUCTION OVERSIGHT:
    THE CONTRACTOR WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.
12. BASIC STANDARDS - EROSION CONTROL MEASURES:
    MINIMUM EROSION CONTROL MEASURES WILL NEED TO BE IMPLEMENTED AND THE CONTRACTOR WILL BE RESPONSIBLE TO MAINTAIN ALL COMPONENTS OF THE EROSION CONTROL PLAN UNTIL THE SITE IS FULLY STABILIZED. HOWEVER, BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL MEASURES MAY NEED TO BE IMPLEMENTED. ALL AREAS OF INSTABILITY AND EROSION MUST BE REPAIRED IMMEDIATELY DURING CONSTRUCTION AND NEED TO BE MAINTAINED UNTIL THE SITE IS FULLY STABILIZED OR VEGETATION IS ESTABLISHED. A CONSTRUCTION LOG MUST BE MAINTAINED FOR THE EROSION AND SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE

    THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES AS PUBLISHED IN 1991 BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION HAS BEEN CHANGED TO THE “MAINE EROSION AND SEDIMENT CONTROL BMPS” PUBLISHED BY THE MAINE DEP IN 2003. ALL REFERENCES SHOULD BE CHANGED TO THE NEW MANUAL. HTTP://WWW.MAINE.GOV/DEP/BLWQ/DOCSTAND/ESCBMPS/INDEX.HTM

EROSION CONTROL BERM DETAIL

N.T.S. (MAY BE USED AS AN ALTERNATE TO SILT FENCE)

SPILLWAY DETAIL

N.T.S.

GENERAL PUMP STATION NOTES:

1. PRECAST CONCRETE STRUCTURE, INCLUDING PUMP STATION WET WELL, AND AIR/ VACUUM RELEASE MANHOLE AND TYPICAL MANHOLES TO CONFORM TO ASTM-478 SPECIFICATIONS, AND BE DESIGNED FOR H-20 WHEEL LOADING.
2. ALL CONCRETE SHALL HAVE COMPRESSIVE STRENGTH FC = 5,000 PSI (28 DAY STRENGTH) EXCEPT AS NOTED. EXTERIOR OF STRUCTURE SHALL BE COATED WITH A WATER-PROOFING CONCRETE COATING, CAMGER PPS-922 SUPERSEAL OR APPROVED EQUAL.
3. REINFORCING STEEL SHALL CONFORM TO ASTM-615-80, GRADE 60 AND SHALL BE REINFORCED TO A MINIMUM OF 0.24 IN^2/LF.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF ALL PRECAST STRUCTURES INCLUDING ANTI-FLOTATION SLABS AND MAY PROVIDE THE PRECAST STRUCTURES REQUIRING ANTI-FLOTATION SLABS AS ONE COMPLETE UNIT. SUBMIT A CERTIFICATE OF DESIGN SIGNED BY A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF MAINE AND HAVING FIVE (5) YEARS MINIMUM EXPERIENCE IN THE DESIGN OF SIMILAR STRUCTURES, CERTIFYING THAT ALL PRECAST STRUCTURES INCLUDING THE ANTI-FLOTATION SLABS, WHETHER PROVIDED SEPARATELY OR AS A MONOLITHIC UNIT, HAVE BEEN DESIGNED TO WITHSTAND ALL FORCES INCLUDING SOIL, TRAFFIC AND HYDROSTATIC IN ACCORDANCE WITH ALL APPLICABLE LAWS, REGULATIONS, RULES, AND CODES. BUOYANCY CALCULATIONS FOR THE STRUCTURE TO DETERMINE NECESSARY ANTI-FLOTATION MEASURES SHALL BE BASED UPON A FULLY SUBMERGED FLOOD AND/OR GROUNDWATER CONDITION.
5. ALL ACCESS STEPS TO BE CO-POLYMER POLYPROPYLENE PLASTIC COATED STEEL OR FORGED ALUMINUM ALLOY CONFORMING TO APPLICABLE SAFETY REQUIREMENTS. STEEL SHALL BE MINIMUM GRADE 60 OR EQUAL, ALUMINUM SHALL BE MINIMUM GRADE 6061-T6 OR EQUAL.
6. WHERE NOTED THROUGH WALL CONNECTIONS SHALL BE MOLDED NEOPRENE COMPOUND AND CONFORM TO ASTM-C923, KOR-N-SEAL GASKETS OR APPROVED EQUAL. EXTERNAL PIPE CLAMP SHALL BE STAINLESS STEEL STRAPS TO PERMIT LIMITED DIFFERENTIAL SETTLEMENT.
7. ALL STRUCTURE JOINTS SHALL BE WATERTIGHT WITH TWO LAYERS OF BUTYL RUBBER, CONSEAL CS102 OR APPROVED EQUAL..
8. ALL WET WELL AND VALVE PIT INTERIOR PIPING AND FITTINGS SHALL BE EPOXY COATED DUCTILE IRON WITH FLANGED CONNECTION. FLANGES SHALL BE CAST IRON CLASS 125 AND COMPLY WITH ANSI B16.1. FLANGED DUCTILE IRON PIPE SHALL BE MINIMUM CLASS 53 THICKNESS PIPE IN ACCORDANCE WITH AWWA/ANSI C151/A21.51. ALL PIPE SUPPORTS AND BOLTS SHALL BE STAINLESS STEEL TYPE 316L WITH STAINLESS STEEL HARDWARE.
9. PIPING BETWEEN WET WELL AND VALVE PIT SHALL BE DUCTILE IRON PIPE, CLASS 53 THICKNESS PIPE IN ACCORDANCE WITH AWWA/ANSI C151/A21.51
10. WET WELL ACCESS HATCH SHALL BE USF FABRICATION APS 300 SERIES, OR EQUAL (30" X 48" MIN.). ACCESS HATCH SHALL BE DESIGNED TO WITHSTAND 300 PSF PEDESTRIAN LOADS.
11. DUPLEX PUMP STATION SHALL USE (2) BARNES SUBMERSIBLE, EXPLOSION PROOF, SOLIDS HANDLING PUMPS, MODEL 3XSHMP3074. EACH PUMP SHALL BE EQUIPPED WITH A 3.0 HP, 1750 RPM SUBMERSIBLE ELECTRIC MOTOR, CONNECTED FOR OPERATION ON 208/230 VOLTS, 1 PHASE, 60 HERTZ, WITH 50 FEET OF SUBMERSIBLE CABLE SUITABLE FOR SUBMERSIBLE PUMP APPLICATIONS. THE POWER CABLE SHALL BE SIZED ACCORDING TO NEC AND ICEA STANDARDS. THE PUMP SHALL BE SUPPLIED WITH A MATING CAST IRON DISCHARGE CONNECTION, BARNES MODEL BAF-3X3. PUMP OPERATING POINT SHALL BE 100 GPM AT 24.8' TDH.
12. MAJOR PUMP COMPONENTS SHALL BE OF GREY CAST IRON, ASTM A-48, CLASS 30, WITH SMOOTH SURFACES DEVOID OF BLOW HOLES OR OTHER IRREGULARITIES. THE LIFTING HANDLE SHALL BE OF STAINLESS STEEL. ALL EXPOSED NUTS OR BOLTS SHALL BE OF STAINLESS STEEL CONSTRUCTION. ALL METAL SURFACES COMING INTO CONTACT WITH THE PUMPAGE, OTHER THAN STAINLESS STEEL, SHALL BE PROTECTED BY TWO COATS OF FACTORY APPLIED, EPOXY DUPONT CORLAR AMINE EPOXY ON THE EXTERIOR OF THE PUMP.
13. THE CABLE ENTRY SEAL DESIGN SHALL PRECLUDE SPECIFIC TORQUE REQUIREMENTS TO INSURE A WATERTIGHT AND SUBMERSIBLE SEAL.
14. THE PUMP MOTOR SHALL BE A NEMA B DESIGN, INDUCTION TYPE WITH A SQUIRREL CAGE ROTOR. THE STATOR WINDINGS SHALL BE INSULATED WITH MOISTURE RESISTANT CLASS H INSULATION RATED FOR 180°C (356°F). THE MOTOR SHALL BE INVERTER DUTY RATED IN ACCORDANCE WITH NEMA MG1, PART 31. THE MOTOR SHALL BE DESIGNED FOR CONTINUOUS DUTY WHILE HANDLING PUMPED MEDIA OF UP TO 104°F. THE MOTOR SERVICE FACTOR (COMBINED EFFECT OF VOLTAGE, FREQUENCY AND SPECIFIC GRAVITY) SHALL BE 1.15. THE MOTOR SHALL HAVE A VOLTAGE TOLERANCE OF +/- 10%. MOTOR HORSEPOWER SHALL BE SUFFICIENT SO THAT THE PUMP IS NON-OVERLOADING THROUGHOUT ITS ENTIRE PERFORMANCE CURVE, FROM SHUT-OFF TO RUN-OUT. THE MOTOR AND CABLE SHALL BE CAPABLE OF CONTINUOUS SUBMERGENCE UNDERWATER WITHOUT LOSS OF WATERTIGHT INTEGRITY TO A DEPTH OF 66 FEET OR GREATER.
15. THE INTEGRAL PUMP/MOTOR SHAFT SHALL ROTATE ON TWO BEARINGS. THE MOTOR BEARINGS SHALL BE SEALED AND PERMANENTLY GREASE LUBRICATED WITH HIGH TEMPERATURE GREASE.
16. EACH PUMP SHALL BE PROVIDED WITH A POSITIVELY DRIVEN DUAL, TANDEM MECHANICAL SHAFT SEAL SYSTEM CONSISTING OF TWO SEAL SETS, EACH HAVING AN INDEPENDENT SPRING. THE SEALS SHALL NOT DEPEND UPON DIRECTION OF ROTATION FOR SEALING.THE SEAL SPRINGS SHALL BE ISOLATED FROM THE PUMPED MEDIA TO PREVENT MATERIALS FROM PACKING AROUND THEM, LIMITING THEIR PERFORMANCE.THE SEAL SYSTEM SHALL NOT RELY UPON THE PUMPED MEDIA FOR LUBRICATION.
17. THE PUMP AND MOTOR SHAFT SHALL BE A SINGLE PIECE UNIT. THE PUMP SHAFT IS AN EXTENSION OF THE MOTOR SHAFT. SHAFTS USING MECHANICAL COUPLINGS SHALL NOT BE ACCEPTABLE. THE SHAFT SHALL BE 416 STAINLESS STEEL.
18. THE IMPELLER SHALL BE OF DUCTILE IRON ASTM A-536, 65-45-12, DYNAMICALLY BALANCED ISO G6.3, ENCLOSED MONOVANE NON-CLOG DESIGN WITH PUMP OUT VANES ON BACK SIDE. THE PUMP VOLUTE SHALL BE A SINGLE PIECE CAST IRON, ASTM A-48, CLASS 30, WITH SMOOTH PASSAGES OF SUFFICIENT SIZE TO PASS ANY SOLIDS THAT MAY ENTER THE IMPELLER.
19. EACH PUMP SHALL HAVE 2-INCH DIAMETER STAINLESS STEEL GUIDE RAILS AND AND BRACKETS, AND STAINLESS STEEL RETRIEVAL CHAIN.
20. THE DISCHARGE OF EACH PUMP SHALL HAVE A MATCO MODEL 120W SWING CHECK VALVE. IN THE VALVE PIT EACH PUMP DISCHARGE SHALL HAVE AN AMERICAN FLOW CONTROL SERIES 2500, RISING STEM, FLANGED GATE VALVE AND A MATCO MODEL 102WC SWING CHECK VALVE WITH OUTSIDE LEVER AND WEIGHT OR APPROVED EQUAL. VALVES SHALL HAVE A DUCTILE IRON BODY CONFORMING TO ASTM A536 GRADE 65-45-12. SWING CHECK VALVES SHALL HAVE A PRECISION MOLDED BUNA-N(NBR) DISC CONFORMING TO ASTM D2000-BG.
21. THE PUMP MANUFACTURER SHALL PROVIDE THE SERVICES OF A FACTORY FIELD SERVICE TECHNICIAN FOR START-UP ASSISTANCE & TRAINING AT THE SITE TO INSPECT THE INSTALLATION AND INSTRUCT THE OWNER'S PERSONNEL ON THE OPERATION AND MAINTENANCE OF THE PUMPING UNITS.
22. PUMP CONTROL PANEL SHALL UL RATED AND CONSTRUCTED TO NEMA 4X STANDARDS AND SHALL INCLUDE THE FOLLOWING COMPONENTS: 30MM OIL TIGHT PUMP RUN LIGHTS (GREEN); 30MM OIL TIGHT PUMP STOPPED LIGHTS (RED); 30MM OIL TIGHT PUMP FAILURE LIGHTS (RED); 30MM OIL TIGHT HAND-OFF-AUTO SWITCHES; PUMP HOUR METER; IEC RATED MOTOR STARTERS WITH ADJUSTABLE OVERLOADS; MOTOR CIRCUIT BREAKERS; 30MM OIL TIGHT ON-OFF HIGH LEVEL ALARM SWITCH; 30MM OIL TIGHT, 1-3/4 INCH PLASTIC, EMERGENCY STOP, RED, NON-ILLUMINATED, PUSH-PULL BUTTON. PANEL SHALL INCLUDE SIEMENS MILLTRONICS HYDRORANGER, MODEL 1P7ML5034-AA01, WITH A SIEMENS ECHOMAX XRS-5 LEVEL TRANSMITTER, AND MECHANICAL LIQUID LEVEL SENSOR BACKUP FLOATS (FOR ALL OPERATION AND ALARM CONDITIONS) FOR WET WELL LIQUID LEVEL CONTROL, ALL EQUIPMENT LOCATED IN THE WET WELL SHALL BE INTRINSICALLY SAFE. PANEL SHALL INCLUDE EXTERIOR MOUNTED RED STROBE LIGHT AND VIBRATONE MODEL 350 HORN FOR ALARM CONDITIONS; THERMOSTATICALLY CONTROLLED CABINET HEATER; AND DUPLEX 115V, 15AMP, GFCI OUTLET. CONTROL PANEL SHALL HAVE A MANUAL TRANSFER SWITCH AND GENERATOR POWER INLET PLUG, CROUSE HINDS PART #AREA6414. CONTROL PANEL SHALL MEET THE REQUIREMENTS OF AUBURN WATER AND SEWERAGE DISTRICTS.
23. CONTROL PANEL COMMUNICATIONS SHALL INCLUDE VHF RADIO, CALAMP GUARDIAN-100 PART 3140506500, ANTENNA, TELEWAVE PART #ANT150Y7-WR AND SURGE ARRESTOR, POLYPHASER PART #VHF50HN, MODICON MOMENTUM PLC PART #170CCS76000, MODICON MOMENTUM SERIAL OPTION ADAPTER PART #172JNN20132, MODICON MOMENTUM I/O MODULE PART #170AMM09000, AND MODICON MOMENTUM I/O MODULE 170ADI34000. ANTENNA SHALL BE MOUNTED TO PROPOSED UTILITY POLE ADJACENT TO PUMP STATION. CONTROL PANEL COMMUNICATIONS SHALL MEET THE REQUIREMENTS OF AUBURN WATER AND SEWERAGE DISTRICTS.
24. PUMP STATION CONTROL PANEL SHALL BE DESIGNED BY MANUFACTURER AND SUBMITTED TO ENGINEER FOR APPROVAL.

NOTES:

1. KEY FABRIC IN A 4"x4" TRENCH W/BACKFILL.
2. SILT FENCE SHALL BE A 3' FENCE WITH A MINIMUM GRAB STRENGTH OF 120 LBS.

SILT FENCE DETAIL

N.T.S.

Waterville
44 Main Street
Suite 204
Waterville, ME
T.207-680-2202
F.207-680-2204

Presque Isle
549 Main Street
PO Box 827
Presque Isle, ME
T.207-764-8412
F.207-764-8414

Brewer
465 South Main Street
PO Box 639
Brewer, ME
T.207-989-4824
F.207-989-4881

Lewiston
640 Main Street
Lewiston, ME
T.207-795-6009
F.207-795-6128

Bar Harbor
1366 State Hwy 102
Bar Harbor, ME
T.207-288-0587
F.207-288-0588

Machias
61 Dublin Street
PO Box 587
Machias, ME
T.207-255-3270
F.207-255-8367

CES INC
Engineers • Environmental Scientists • Surveyors

PROJECT TITLE
AUBURN ASH LANDFILL LEACHATE FORCE MAIN
AUBURN, MAINE

SHEET TITLE
DETAILS

REV.	DESCRIPTION	DATE	DRAWN BY
R1			
R2			
R3			
R4			
R5			
R6			
R7			

ISSUE STATUS
FOR CONSTRUCTION

STATE OF MAINE
Nathan Gustafson
13589
5-5-2017
LICENSED PROFESSIONAL ENGINEER

SCALE: NOT TO SCALE
DATE: 2017-05-05
DRAWN BY: BLQ
CHECKED BY: NAG/JAS
DESIGNED BY: NAG
APPROVED BY: NAG
JOB NUMBER: 10473.009
DRAWING NUMBER: **C502**

P:\10473-AUBURN_CITY_OF\009-ASH LANDFILL-LEACHATE CONVEY.DESIGN & PERMIT\02-CAD_DRAWINGS\CIVIL\DSGN_DWGS\CONSTRUCTION DWGS\104173.007-DT.DWG, 5/5/2017 8:55 AM