STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Paul R. LePage
GOVERNOR

David Bernhardt
COMMISSIONER

January 10, 2013
Subject: **Yarmouth**
Federal Project No: IM-1108(600) & CM-1749(000)X
State WIN: 011086.00 & 017490.00
Amendment No. 1

Dear Sir/Ms:

Make the following changes to the Bid Documents:

In the Bid Book, after page 54, **ADD** the attached "SPECIAL PROVISION, SECTION 105, GENERAL SCOPE OF WORK" 1 page dated January 11, 2013.

In the Bid Book (page 61) **REMOVE** "SPECIAL PROVISION, SECTION 105, GENERAL SCOPE OF WORK" 1 page dated December 13, 2012 and **REPLACE** with the attached new "SPECIAL PROVISION, SECTION 105, GENERAL SCOPE OF WORK" 1 page dated 1/11/13.

In the Bid Book (page 65); "SPECIAL PROVISION, SECTION 107, Prosecution and Progress, (Contract Time)", in the upper right hand corner **CHANGE** "Falmouth" to read "**Yarmouth**". Make this change in pen and ink.

In the Bid Book, after page 109, **ADD** the attached "SPECIAL PROVISION, SECTION 400, HOT MIX ASPHALT PAVEMENTS, (Polymer Modified PGAB for HMA), 1 PAGE DATED March 21, 2011.

In the Bid Book, before page 110, **ADD** the attached "SPECIAL PROVISION, SECTION 401, HOT MIX ASPHALT PAVEMENTS, (Asphalt Rich Base Mixture)" 2 pages dated April 17, 2009.

In the Bid Book, after page 117, **ADD** the attached "SPECIAL PROVISION, SECTION 502, STRUCTURAL CONCRETE, (Quality Level Analysis)", 4 pages dated May 4, 2006.

In the Bid Book, before page 118, **ADD** the attached "SPECIAL PROVISION, SECTION 502, STRUCTURAL CONCRETE, (QC/QA Acceptance Methods)", 1 page dated January 4, 2013.

In the Bid Book, after page 143, **ADD** the attached "SPECIAL PROVISION, SECTION 634, Highway Lighting, and, SECTION 643, Traffic Signals" 1 page dated September 20, 2012.

In the Bid Book (pages 155 thru 182) **REMOVE** "SPECIAL PROVISION, SECTION 636, SOIL NAIL WALL" 28 pages dated 30 November 2012 and **REPLACE** with the attached new "SPECIAL PROVISION, SECTION 636, SOIL NAIL WALL" 29 pages dated 8 January 2013.

In the Bid Book, after page 265 (last page) ADD the attached environmental package (draft) 22 pages total.

In the Plans, Sheet 8 of 283, "TYPICAL SECTIONS" **CHANGE** Note 1 to read as follows; "**1. STA. 113+50 TO STA. 124+50 ADD ULTRA THIN BONDED WEARING COURSE TO TOP SURFACE (MAINLINE TRAVELWAY & SHOULDERS)"** Make this change in pen and ink.

In the Plans **ADD** the attached four (4) plan sheets titled "TEMPORARY SIGNAL PLAN" after Plan Sheet 283 of 283.

NOTE: Plan holders who ordered plans will be FedExed/Mailed plan sheets in the size and quantity purchased.

CADD File Location link below:
http://www.maine.gov/mdot/filedownloads/win11086/index.htm

The following questions have been received:

Question: Would the Department please provide CADD files with existing and proposed grading and all other line work pre-bid?

Response: Yes, please see the above link.

Question: Would MDOT consider the use of aluminum poles versus steel poles as indicated on the plans?

Response: No

Question: Could MDOT provide information on bid item 643.72 – temporary Traffic Signal at exit 10 & 17?

1. What page of the plans and what station are these located?
2. Please provide a timing schedule.

Any additional information on these signals would be appreciated.

Response: Please see plans and specifications in amendment package.

Question: Can you please define the scope of work required to be completed by June 14, 2013 in order to open NB exchange; i.e. Permanent signage required?, striping? Finish pavement?

Response: Please see plans and specifications in amendment package.

Question: I'm not seeing any information on temporary signal requirements – please clarify.

Response: Please see plans and specifications in amendment package.

Question: Regarding bid item #626.31 – 18" Foundation, A 30' light pole should have a minimum of a 24" foundation. Would MDOT accept the use of a 24" foundation?

Response: Substituting the 24" foundation for the 18" is acceptable provided there is no cost change for this item (item 626.31).

Question: Regarding bid item 626.33 – 30" foundations – MDOT has always used 24" foundations for light poles on all other projects that call for light poles. Would MDOT accept the use of 24" foundations in place of the 30"?

Response: Substituting the 24" foundation for the 30" is acceptable provided there is no cost change for this item (item 626.33).

Question: Regarding sign TS-1 located on page 278 of the plans. There is no pay item for the sign – foundation – or steel breakaways. How will this sign be paid for?

Response: According to MaineDOT Standard Specifications for Section 645 (645.09) guide sign foundations are paid for under the guide sign item number 645.251 measured in Square feet (as it is shown on the plans). Also, on Plan Sheet 258 Note 4 specifies that the breakaway devices are incidental to the sign items.

Question: Page 8 of the plan set note #1 outlines application of ultra-thin bonded wearing course from sta 113+50? To sta 124+50? Do the question marks refer to the exact stationing or if the item will be used?

Response: Please see the above pen and ink change.

Question: Could MDOT provide CAD files for this project?

Response: Yes

Question: Are there any time restraints on opening the new southbound on ramps to traffic?

Response: No

Question: What is the intent of item 642.30 Ultra-thin bonded wearing course and why is it only to be applied in the new north bound on ramp?

Response: The intent of the item 462.30 is to be placed on the Northbound off ramp to increase surface friction on the pavement surface.

Question: Section 107 note 5 states that once work on the project commences, the contractor shall continue work until the project is complete. Will the successful contractor be allowed to clear the project while the ground is still frozen and then return once the ground is thawed to avoid severe soil disturbance?

Response: Yes

Question: Will the contractor be allowed to use off road/haul trucks on the Route 1 overpass to transport material from the southbound and northbound sides of the project?

Response: No

Question: Please clarify Type A, Type B or Type C for Bid Item #462.30 Ultrathin Bonded Wearing Course.

Response: The Ultrathin Bonded Wearing Course (462.30) shall be Type C.

Question: Will the Southbound Off Ramp be closed to traffic during its construction?

Response: No

Question: Will it be possible to close the Southbound On Ramp for a week during construction at the intersection with Main Line (498+50 to 504+00)?

Response: No

Consider these changes and information prior to submitting your bid on January 23, 2013.

Sincerely,

George M. A. Macdougall P.E.
Contracts & Specifications Engineer

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK

105.8.2 Permit Requirements The Department has applied for Environmental Permits, draft Environmental Permits are included in this contract for bidding purposes. Final permits will be issued prior to award.

SPECIAL PROVISION
SECTION 105
General Scope of Work

1. Prior to the Northbound Ramps being fully closed to the traveling public, temporary signals at Exit 10 and Exit 17 shall be fully functional and operating as approved by the resident engineer.

2. Northbound On and Off Ramps shall be completed and open to the traveling public on or before June 14, 2013. The following must be complete by the end of the day on June 14, 2013; All Northbound on and off ramp surface pavement, all permanent signing, all highway lighting and the removal of temporary traffic signals at Exit 10 and Exit 17.

3. Supplemental Liquidated Damages will be assessed the Contractor in the amount of Two-Thousand Five Hundred Dollars ($2,500.00) for every Calendar Day that the Northbound On/Off ramps remain closed to the traveling public beyond June 14, 2013 and shall continue until ramps are complete and open as directed.

4. No northbound on and off ramp closures will be allowed after June 14, 2013.

5. Northbound on and off ramps must remain operational after June 14, 2013.

SPECIAL PROVISION
SECTION 400
HOT MIX ASPHALT PAVEMENTS
(Polymer Modified PGAB for HMA)

401.05 Performance Graded Asphalt Binder This section and Special Provision 403 has been amended as follows:

The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. Performance Graded Asphalt Binder shall be polymer modified as detailed below and shall conform to the requirements of AASHTO M 320. The required PGAB shall be a storage-stable, pre-blended, homogeneous, polymer modified asphalt binder that meets a **PG 70-28** to **PG 76-28** grading.

The RTFOT (AASHTO T 240) residue of the polymer modified PGAB shall be tested by the Contractor according to ASTM D 6084 and have a minimum elastic recovery value of 60% at a test temperature of 25 °C. The Contractor shall provide the Department with documentation and test results from the asphalt binder provider showing that the PGAB meets the requirements of this special provision. The Department may take an informational sample of the polymer modified PGAB at any time to evaluate its elastic recovery value.

Payments will be made under the appropriate mixture type used:

Pay Item		Pay Unit
403.2071	19.0 mm Polymer Mod. Hot Mix Asphalt Base	Ton
403.2081	12.5 mm Polymer Mod. Hot Mix Asphalt Surface	Ton
403.2101	9.5 mm Polymer Mod. Hot Mix Asphalt	Ton
403.2111	9.5 mm Polymer Mod. Hot Mix Asphalt Shim	Ton
403.2121	4.75 mm Polymer Mod. Hot Mix Asphalt Shim	Ton
403.2131	12.5 mm Polymer Mod. Hot Mix Asphalt Base	Ton

SPECIAL PROVISION
DIVISION 401
HOT MIX ASPHALT PAVEMENTS
(Asphalt Rich Base Mixture)

The Special Provision 400 – Pavements; Section 401 – Hot Mix Asphalt Pavements ; the following subsections have been modified with the following :

Description The Contractor shall furnish and place one or more courses of Asphalt Rich Base Hot Mix Asphalt (ARBHMA) on an approved base in accordance with the contract documents and in reasonably close conformity with the lines, grades, thickness, and typical cross sections shown on the plans or established by the Resident. The Department will accept this work under Quality Assurance provisions, in accordance with these specifications and the requirements of Section 106 – Quality, the provisions of AASHTO M 323 except where otherwise noted in sections 401 and 703 of these specifications, and the Maine DOT Policies and Procedures for HMA Sampling and Testing.

MATERIALS

401.02 Materials This section has been modified with the following revision:

The Asphalt Rich Base HMA shall be designed for an Air Void Target of 2.5 % at 50 Gyrations**.**

401.03 Composition of Mixtures This section has been modified with the following revision:

The Asphalt Rich Base HMA shall meet the following design criteria.

DESIGN CRITERIA

Gradation	PGAB Targets
9.5mm mixture	7.0 %
12.5mm mixture	6.5 %
19.0mm mixture	6.0 %

The mixture shall meet the gradation requirements of a current MaineDOT approved 9.5mm, 12.5mm, or 19.0mm 50 Gyration JMF, as required by the contract, and the minimum PGAB content noted above. The Acceptance Limit targets for gradation will be as specified on the JMF.

401.201 Method A Lot Size will be the entire production per JMF for the project, or if so agreed at the Pre-paving Conference, equal lots of up to 4050 Mg [4500 tons], with unanticipated over-runs of up to 1350 Mg [1500 ton] rolled into the last lot. Sublot sizes shall be 675 Mg [750 ton] for mixture properties, 450 Mg [500 ton] for base or binder densities and 225 Mg [250 ton] for surface densities. The minimum number of sublots for mixture properties shall be 4, and the minimum number of sublots for density shall be five.

TABLE 5: METHOD A ACCEPTANCE LIMITS

Property	USL and LSL
Passing 4.75 mm and larger sieves	Target +/-7%
Passing 2.36 mm to 1.18 mm sieves	Target +/-4%
Passing 0.60 mm	Target +/-3%
Passing 0.30 mm to 0.075 mm sieve	Target +/-2%
PGAB Content	Target +/-0.4%
Air Voids	**2.5**% +/-1.5%
Fines to Effective Binder	0.4 to 1.2
Voids in the Mineral Aggregate	LSL Only from Table 1
Voids Filled with Binder	72 – 87.0 *
% TMD (In place density)	96.0% +/- 2.5%

* A production tolerance of 4.0% will apply for the USL.

Payment will be made under:

Pay Item	Pay Unit
403.2102 – 9.5mm Asphalt Rich Base HMA	Ton
403.2132 – 12.5mm Asphalt Rich Base HMA	Ton
403.2072 – 19.0mm Asphalt Rich Base HMA	Ton

May 4, 2006
Supersedes September 29, 2004

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Quality Level Analysis)

502.01 Description In second sentence, replace "…METHOD B Small Quantity Product Verification…" with "…METHOD B Statistical Acceptance…"

502.05 Composition and Proportioning Delete Table 1 and replace with the following;

TABLE 1- Methods A and B

Concrete CLASS	Compressive Strength (PSI)		Permeability (COULOMBS)		Entrained Air (%)		Notes
	LSL	USL	LSL	USL	LSL	USL	
S	2,900	N/A	N/A	N/A	6.0	8.5	1, 5
A	4,350	-----	-----	2,400	6.0	8.5	1,2,5,6
P	-----	-----	-----	-----	5 ½	7 ½	1,2,3,4,5
LP	5,075	-----	-----	2,000	6.0	8.5	1,2,5,6
Fill	2,900	N/A	N/A	N/A	N/A	N/A	6

502.503 Delete and replace with the following;

"502.0503 Quality Assurance METHOD B The Department will determine the acceptability of the concrete through a quality assurance program.

The Department will take Quality Assurance samples a minimum of once per sublot on a statistically random basis. Quality Assurance tests will include compressive strength, air content and permeability.

Concrete sampling for quality assurance tests will be taken at the discharge point, with pumped concrete sampling taken at the discharge end of the pump line.

Lot Size A lot size shall consist of the total quantity represented by each class of concrete in the Contract, except in the case when the same class of concrete is paid for under both lump sum items and unit price items in the Contract; in this case, the lump sum item quantities shall comprise 1 lot and the unit price item quantities shall comprise a separate lot. A lot shall consist of a minimum of 3 and a maximum of 10 sublots. If a lot is comprised of more than 10 sublots, sized in accordance with Table #3, then this quantity shall be divided equally into 2, or more, lots such that there is a minimum of 3 and a maximum of 10 sublots per lot. If there is insufficient quantity in a lot to meet the recommended minimum sublot size, then the lot shall be divided into 3 equal sublots.

Sublot Size, General The size of each sublot shall be determined in accordance with Table #3. The Resident may vary sublot sizes based on placement sizes and sequence.

Sublot Size, Unit Price Items Sublot sizes will initially be determined from estimated quantities. When the actual final quantity of concrete is determined: If there is less than one-half the estimated sublot quantity in the remaining quantity, then this quantity shall be combined with the previous sublot, and no further Acceptance testing will be performed; if there is more than one-half the estimated sublot quantity in the remaining quantity, then this quantity shall constitute the last sublot and shall be represented by Acceptance test results. If it becomes apparent part way through a lot that, due to an underrun in quantity, there will be an insufficient quantity of concrete to comprise three sublots, then the Resident may adjust the sizes of the remaining sublots and select new sample locations based on the revised estimated quantity of concrete remaining in the lot.

Sublot Size, Lump Sum Items Each lot shall be divided into sublots of equal size, based on the estimated quantity of concrete.

TABLE 3

Quantity m^3 [cy]	Recommended Sublot Size m^3 [cy]
0-400 [0-500]	40 [50]
401-800 [501-1000]	60 [75]
801-1600 [1001-2000]	80 [100]
1601 [2001]or greater	200 [250]

Determination of the concrete cover over reinforcing steel for structural concrete shall be made prior to concrete being placed in the forms. Bar supports, chairs, slab bolsters, and side form spacers shall meet the requirements of Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice, Chapter 3 Section 2.5 Class 1, Section 2.6 Class 1A, or Section 4. All supports shall meet the requirements for type and spacing as stated in the CRSI Manual of Standard Practice, Chapter 3. Concrete will not be placed until the placing of the reinforcing steel and supports have been approved by the Resident. If the Contractor fails to secure Department approval prior to placement, the Contractor's failure shall be cause for removal and replacement at the Contractor's expense. The Contractor shall notify the Resident, at least 48 hours prior to the placement, when the reinforcing steel will be ready for checking. Sufficient time must be allowed for the checking process and any needed repairs.

Evaluation of materials will be made using the specification limits in Table 1.

Compressive strength tests will be completed by the Department in accordance with AASHTO-T22 at ≥ 28 days, except that no slump will be taken. The average of two concrete cylinders per sublot will constitute a test result and this average will be used to determine the compressive strength for pay adjustment computations.

Testing for Entrained Air in concrete, at the rate of one test per sublot, shall be in accordance with AASHTO T152.

Rapid Chloride Permeability test specimens will be completed by the Resident in accordance with AASHTO T-277 at an age ≥ 56 days. Two 100 mm x 200 mm [4 in x 8 in] cylinders will be taken per sublot placed.

Surface Tolerance, Alignment and Trueness, Plumb and Batter, and Finish will be measured as described in Section 502.0502.

Rejection by Resident For an individual sublot with a calculated pay factor of less than 0.80, the Department will, at its sole discretion:

A. Require the Contractor to remove and replace the entire affected placement with concrete meeting the Contract requirements at no additional expense to the Department, or

B. Accept the material, at a reduced payment as determined by the Department. (See also Section 502.191)

For a lot in progress, the Contractor shall discontinue operations whenever one or more of the following occurs:

A. The pay factor for any property drops below 1.00 and the Contractor is taking no corrective action

B. The pay factor for any property is less than 0.90

C. The Contractor fails to follow the QC Plan"

502.18 Method of Measurement Under Section E. make the following change from "….Method A, and under Section 502.19…" to "…Method A, Section 502.0503- Quality Assurance Method B, and under Section 502.19…"

502.19 Basis of Payment Modify the first sentence of the seventh paragraph from "…accepted under Method A." to "…accepted under Method A and Method B."

502.191 Pay Adjustment for Compressive Strength Add the following as the second sentence to the first paragraph; "Pay factors (PF) for pay adjustments for compressive strength will be determined using the Quality Level Analysis as specified in Section 106."

502.192 Pay Adjustment for Chloride Permeability Delete and replace with the following;

"Pay factors (PF) for pay adjustments for Chloride Permeability will be determined using the Quality Level Analysis as specified in Section 106.

Values greater than 4000 coulombs shall be subject to rejection and replacement at no additional cost to the Department."

502.193 Pay Adjustment for Air Content Delete and replace with the following;

"Pay factors (PF) for pay adjustments for air content will be determined using the Quality Level Analysis as specified in Section 106."

Add the following Section;

"502.195 Pay Adjustments for Compressive Strength, Chloride Permeability and Air Content The Composite Pay Factor (CPF) for each lot of concrete shall be computed as follows:

CPF = [(Compressive Strength PF-1)(0.20)] + [(Air Content PF-1)(0.40)]
+ [(Chloride Permeability PF-1)(0.40)]

The pay adjustment for each lot of concrete shall be computed as follows:

Lot Pay Adjustment = P x CPF x Lot Size

There will be no positive pay adjustments for Method B Concrete."

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(QC/QA Acceptance Methods)

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
LP	636.411	Concrete Facing (inc.)	$450	A
LP	626.31	18 Inch Foundation	$450	A
LP	626.33	30 Inch Foundation	$450	A

P values listed above reflect the price per cubic meter (yd^3) for all pay adjustment purposes.

SPECIAL PROVISION
SECTION 634
Highway Lighting
and
SECTION 643
Traffic Signals

634.08 Service
634.09 Service Connection
Add the following to each of these sections:

METER POSITION
All meter mounting devices shall be installed so that the meters will be upright (plumb). They shall be installed with the top of the meter not less than 48 inches nor more than 60 inches from the floor or final grade. Exceptions to this height requirement will be made where special permission has been given to install group or modular metering, overall meter enclosures or pole-mounted meters.

Level grade shall be maintained for a minimum of 36 inches in front of the meter enclosure to provide a safe working space. In order to meet this requirement on uneven terrain, as an option, the Contractor may install a pressure-treated wood platform.

For any **non-residential** (industrial or commercial) self-contained meter socket, the **bypass requirements** are as follows:
Meter Socket Bypass
Single-Phase:
100 or 150 amp *Single handle lever operated bypass required.

A disconnect in an enclosure rated for 480 volts shall be installed between the meter trim and the control cabinet, external to the control cabinet.

The Contractor shall meet all requirements and regulations of utility companies when installing equipment on their poles and for the service connection. It is the responsibility of the Contractor to contact the utility companies to determine specific requirements.

SPECIAL PROVISION
SECTION 636
SOIL NAIL WALL

636.01 Definitions

"Layout Drawings". For purposes of this Special Provision, the term "Layout Drawings" shall refer to the plans, profile and typical cross-sections shown on the Drawings. "Layout Drawings" are one form of "Plans" as defined in Section 101.2.

"Soil Nail Wall Design". For purposes of this Special Provision, the term "Soil Nail Wall Design" shall refer to design information (including drawings, working drawings, shop drawings, sketches, calculations, tables, catalog cuts, or other relevant information) provided to fulfill the requirements of Special Provision 636 Design of Soil Nail Wall, and approved by the Resident.

636.02 Description

The Work shall consist of constructing a permanent soil nail retaining wall as specified herein and as shown on the Drawings. The Contractor shall furnish all labor materials and equipment required for completing the Work. The Contractor shall select the method of excavation, drilling method and equipment, final drillhole diameter, and grouting procedures to meet the performance requirements specified herein.

The Work shall include excavating in accordance with the staged lifts specified in the soil nail wall design; drilling soil nail holes to minimum length and orientation specified in the soil nail wall design; providing, placing and grouting the encapsulated steel (epoxy coated) bars (nails) in the drillholes; placing drainage elements; placing shotcrete reinforcement; applying shotcrete facing over the reinforcement; attaching bearing plates and nuts; performing nail testing. Shotcrete facing construction and placing drainage elements are covered under this Special Provision. Cast-in-place concrete facing construction is covered by the Standard Specifications.

The term "Soil Nail" as used in these Specifications is intended as a generic term and refers to a reinforcing bar grouted into a drilled hole installed in any type of ground.

A pre-construction meeting shall be held prior to the start of the Work and shall be attended by the Resident or the Department's duly authorized representative, the Soil Nail Wall designer, the Contractor, and the Soil Nail Wall specialty Subcontractor. The pre-construction meeting shall be conducted to clarify the construction requirements for the Work, to coordinate the construction activities, and to identify contractual relationships and responsibilities.

Existing foundations, utilities and other underground structures referenced on the Layout Drawings are for informational purposes only. The Contractor is responsible for field locating and verifying the location of all existing foundations (including steel H-piles supporting the existing Route 1 Overpass Bridge), utilities and other underground structures prior to starting the Work. The Contractor shall maintain uninterrupted service for those structures and utilities designated to remain in service throughout the Work.

636.03 Quality Assurance

The Contractor shall submit a reference list indicating the successful completion of at least five (5) permanent soil nail or ground anchor retaining wall projects completed during the last three years. A brief description of each project with the owner's name and current phone number shall be included.

The Contractor's superintendent shall have a minimum of three (3) years experience supervising soil nailing and/or ground anchor work, and the drill operators and on-site supervisors shall have a minimum of one (1) year experience installing permanent soil nails or ground anchors. Prior to starting the Work, the Contractor shall submit a list identifying the superintendent, drill rig operators, and on-site supervisors assigned to the project. The list shall contain a summary of each individual's experience and shall be sufficiently complete for the Resident to evaluate the individual's qualifications. The Contractor shall not use consultants or manufacturer's representatives to satisfy the requirements of this section. The Resident will approve or reject the Contractor's qualifications within 15 days after receipt of a complete submission. Work shall not be started nor materials ordered until written approval of the Contractor's qualifications is given.

The Resident may suspend the Work if the Contractor substitutes non-approved personnel for approved personnel. The Contractor shall be fully liable for additional costs resulting from the suspension of Work and no adjustments in the contract time resulting from the Work suspension shall be allowed.

636.04 Construction Site Survey

The Contractor shall visit the site prior to any construction activities for the purpose of observing and documenting the pre-construction condition of all structures, infrastructure, sidewalks, roadways, and all other facilities adjacent to the site. The Contractor shall observe the conditions above the Soil Nail Wall on a daily basis for signs of ground or structure movements. The Contractor shall immediately notify the Resident if signs of movements such as new cracks in structures, increased size of old cracks or separation of joints in structures, foundations, streets or paved and unpaved surfaces are observed. The Contractor shall provide the Resident with written documentation of the observed conditions within 24 hours.

636.05 Submittals

The Contractor shall provide the following submittals to the Resident for review and approval. The Contractor will not be allowed to begin soil nail wall construction until all submittal requirements are satisfied and found to be acceptable to the Resident. Changes or deviations from the approved submittals must be re-submitted for approval. No adjustments in contract time will be allowed due to incomplete submittals.

At least 30 days prior to initiating the Work, the Contractor shall submit to the Resident:

1. Details of the equipment and procedures the Contractor proposes to use for grouting permanent soil nails, including regrouting, methods of controlling ground water, and proposed drillhole diameter to achieve the bond strength value specified in the drawings and any variation of these along the alignment.

2. Written documentation of Contractor's qualifications as required under this Section.

3. Applicable literature from the manufacturer describing equipment proposed to pump soil nail grout into drill holes.

4. Applicable literature from the soil nail assembly manufacturer showing the details of construction, recommended installation procedures, yield and ultimate strength of steel and the minimum cross sectional area.

5. Literature and details describing the specified factory applied “corrosion protection” for the permanent soil nail assemblies.

6. Proposed detailed installation procedures for permanent soil nails indicating proposed equipment and methods to be used for drilling, controlling water pressures, installing, grouting, and testing soil nails.

7. Details of each drillhole size, bar size, cement grout mix design combination on which performance tests will be conducted.

8. Applicable manufacturer’s literature on the epoxy coating for the nail bar and anchor head assembly.

9. A detailed construction sequence, planned start of work date, and schedule for completing construction.

10. Methods of excavating the staged lifts and proposed type of excavation equipment.

11. Details of the Contractor’s proposed nail grout mix design to be used for grouting of permanent soil nails, which shall include:

a. Brand and type of Portland cement.
b. Source, gradation, and quality of all aggregates.
c. Proportions of mix by weight and water-cement ratio.
d. Manufacturer and brand name of all admixtures (where allowed).
e. Compressive strength test results (per ASTM C109) verifying the specified minimum 3 and 28 day grout compressive strengths.
f. Previous test results for the same grout mix completed within one year of the start of work may be submitted for verification of the required compressive strengths.

Alternatively, for bagged products, include:

a. Written certification that the bagged product meets the requirements specified herein.
b. Manufacturer’s quality control tests.

12. Soil nail testing methods and equipment including:

a. Details of the jacking frame and appurtenant bracing.

b. Details showing methods of isolating test nails during shotcrete application (i.e., methods to prevent bonding of the soil nail bar and the shotcrete).

c. Details showing methods of grouting the unbonded length of test nails after completion of testing.
d. Equipment list.

13. Identification number and certified calibration records for each load cell and test jack pressure gauge to be used. Calibration records shall include the date tested, device identification number, and the calibration test results and shall be certified for an accuracy of at least 2 percent of the applied certification loads by a qualified independent testing laboratory within 90 days prior to submittal.

14. Certified mill test results for nail bars from each type specifying the ultimate strength, yield strength, elongation, composition, and the minimum cross sectional area.

15. Manufacturer certifications for the soil nail centralizers, epoxy coating or encapsulation.

16. A detailed construction drainage control plan addressing all elements necessary to divert, control and dispose of surface water.

17. A detailed action plan for controlling groundwater seepage from the excavation face, mitigating raveling soils, and preventing damage to the soil nail wall.

18. A detailed description of the Contractor's proposed sequence of operations and any other precautions that will be taken to ensure that the various required minimum anchor lengths and sizes are installed at the locations indicated on the drawings.

19. Proposed method of shotcrete placement.

20. Certified shotcrete mix design including:

a. Brand and type of Portland cement used.
b. Source, gradation and quality of aggregates as specified herein.
c. Proportions of mix by weight.
d. Proposed admixture, manufacturer, dosage, technical literature (when admixture allowed).
e. Compressive strength test results from the manufactures records no older than 6 months verifying the 28-day compressive strength.

21. Certified mill tests for all reinforcing steel specifying the minimum ultimate strength, yield strength, elongation and composition.

22. Complete data for the drainage geotextile and geocomposite drain strip including manufacturer's certificate of compliance, and installation instructions.

23. Certifications of Compliance for bearing plates, nuts, curing compounds (if used), drainage aggregate and PVC drain piping

24. Methods of controlling location of front face and determining shotcrete thickness.

25. Proposed detailed installation procedures for steel reinforcement, including method to be used to support steel reinforcement.

26. Proposed methods to be used for temporary dewatering which shall include arrangements, locations and depths of the proposed systems, a complete description of equipment and materials to be used and the procedures to be followed in the installation, operation and maintenance in relation to the proposed sequence of excavation and the proposed locations of points of discharge of water and their relationships to sedimentation control and groundwater treatment systems.

27. Manufacturer's information for the equipment to be used to conduct verification and proof tests on the soil nails. Submit diagram(s) showing the geometry of verification and proof test equipment relative to permanent steel reinforcement bar, end hardware, load cell, method of locking off and adjusting specified load and calibration data for the system of jack and permanent gauges, including a diagram of the Contractor's proposed test equipment setup(s) for monitoring elongation of the bars during verification and proof tests on permanent soil nails.

28. Details on temporary shotcrete facing including materials, methods and control procedures for this work.

29. Details of methods to be used to install temporary casing to prevent any reaction between the casing and the grouted bond length of the nail and/or stressing length during nail testing.

30. Formwork design calculations and details for casting the cast-in-place facing, prepared by a Licensed Professional Engineer in the State of Maine

636.06 Materials

Materials for construction of the soil nail wall(s) shall be furnished new and without defects. The Contractor at no additional cost shall remove defective material from the job site to the Department. Materials for soil nail structures shall consist of the following:

1. Soil Nail Bar

A. All permanent steel nail bars shall be straight shaft, deformed continuous thread bar, new, straight, undamaged, with full length fusion-bonded epoxy coating and of the size and type indicated in the approved Contractor design.
B. Permanent steel nail bars shall be ASTM A615 steel, deformed continuous thread bar.
C. Permanent steel nail bars shall consist of a single length continuous threaded steel bar, without splices or welds, as indicated on the plans.

2. Anchorage Assembly

A. Anchorages shall be capable of developing a minimum of 100 percent of the guaranteed minimum ultimate tensile strength of the steel thread bar.

B. The bearing plate shall be fabricated from Grade A36 steel and shall be capable of developing a minimum of 100 percent of guaranteed minimum ultimate tensile strength of the nail bar.
C. All bearing plates, nuts, washers, etc. shall be galvanized.
D. Centralizers are required and shall be fabricated from Schedule 40 PVC, or other material not detrimental to the nail steel (wood shall not be used) and shall be capable of being securely attached to the nail bar. The centralizers shall be sized to meet the tolerance requirements for nail locations, grout cover, and for tremie pipe installation as specified herein.

3. Cement Grout

A. Site mixed grout and pre-packaged (or bagged) grout satisfying the requirements herein are acceptable.
B. Nail grout shall be a non-shrink neat cement or sand/cement with a maximum water to cement ratio of 0.45 by weight, a minimum three day compressive strength of 1500 psi and a minimum 28 day compressive strength of 3000 psi per ASTM C109.
C. Redesign of the cement grout mix shall be conducted by the Contractor, if grout does not achieve the minimum compressive strength cited in Section A above within 28 days.
D. Water for mixing grout shall be potable.
E. Grout strength accelerators shall not be used. Expansive admixtures shall only be used for secondary grouting, and fitting trumpets. Mixes using Type K cement or bagged products meeting the requirements of this specification may be used. Admixtures which control bleed and retard set may be used. Admixtures shall be mixed and placed in accordance with manufacturer's recommendations.
F. Appropriate measures shall be taken to preclude freezing of the grout prior to its reaching design strength.
G. Contractor shall take all appropriate measures in cold weather conditions to preclude freezing during grout mixing or tremie delivery.
H. Cement shall conform to ASTM C150, Type I, II, or III Portland cement.

4. Corrosion Protection

A. All bearing plates, nuts, washers, couplings and hardware, etc. shall be galvanized, per AASHTO M111 (plates) and M232 (hardware).
B. Nail bars shall be fusion bonded epoxy coated. Fusion bonded epoxy coating shall conform to ASTM A775. Epoxy coating shall be electro-statically applied to a minimum 15 mils thickness. The entire length of the bar shall have fusion bonded epoxy coating. Bend test requirements shall be waived.

5. Wall Drainage Network

A. The drainage network shall consist of geocomposite drain strips, PVC connection pipes, and drain grates within the limits of the wall as shown on the plans. All elements of the drainage network shall be installed prior to shotcreting each lift.

B. Geocomposite drain strip shall have a core that is fully wrapped with a non-woven geotextile and shall have a cellular plastic backing. The geocomposite drain strip shall conform to the following physical requirements:

TABLE A

Composite Property	Test Method	Minimum Property Requirement*
Water Flow Rate (gpm/ft. width):	ASTM D-4716	
-Hydraulic Gradient of 1.0		15
-Hydraulic Gradient of 0.1		3
Apparent Opening Size (U.S. Standard Sieve Size)	ASTM D4751-87	No. 100 Sieve
Grab Tensile Strength (lb)	ASTM D-4632	100

*All geotextile properties are minimum average roll values (i.e., the test results for any sampled roll in a lot shall meet or exceed the minimum values in the table).

C. PVC connection pipe and weep holes shall conform to the following:
Pipe: ASTM 1785 Schedule 80 PVC, solid and perforated wall, cell classification 12454-B or 12354-C, wall thickness SDR 35, with solvent weld.
Fittings: ASTM D3034, cell classification 12454-B or 12454-C, wall thickness SDR35, with solvent weld.
Solvent Cement: ASTM D2564
Primer: ASTM F656

6. Permanent Structural Shotcrete

A. Shotcrete shall comply with the requirement of ACI 506.2 "Specification for Materials, proportioning, and Application of Shotcrete," published by the American Concrete Institiute, Detroit, Michigan, except as modified by the requirements of this specification. Shotcrete shall consist of an application of one or more layers of mortar or concrete conveyed through a hose and pneumatically projected at high velocity against a prepared surface.

B. Shotcrete may be produced by either a dry-mix or a wet-mix process. For additional descriptive information, the Contractor's attention is directed to the American Concrete Institute Standard "A Guide to Shotcrete (ACI 506R)."

C. Cement shall comply with ASTM C150, Type I, II or III.

D. Fine aggregate shall comply with ASTM C33. Fine aggregate shall be clean, natural sand. Artificial or manufactured sand is acceptable provided it is suitable for pumping in accordance with ACI 304, 4.2.2.

E. Accelerating additives shall be fluid type, applied at the nozzle and shall be compatible with the cement used, be non-corrosive to steel and shall not promote

other detrimental effects such as cracking and excessive shrinkage and shall not contain calcium chloride. They are to be used in accordance with manufacturers' recommendations. Silica fume, if used, shall not exceed 10 percent of the cement weight and shall be an admixture with a minimum of 90 percent SiO2 with a proven record of performance for use in shotcrete.

F. Water used in the shotcrete mix shall be potable, clean and free from substances which may be injurious to concrete and steel. The water shall also be free of elements which would cause staining.

G. Admixtures used to entrain air, to reduce water-cement ratio, to retard or accelerate setting time, or to accelerate the development of strength, shall be thoroughly mixed into the shotcrete at the rate specified by the manufacturer unless specified otherwise. Accelerating additives shall be compatible with the cement used, be non-corrosive to steel and shall not promote other detrimental effects such as cracking or excessive shrinkage. The maximum allowable chloride ion content of all ingredients shall not exceed 0.10% when tested in accordance with ASTM C1218.

H. Shotcrete shall have a minimum compressive strength at 3 and 28 days of 2000 and 4000 psi, respectively, when tested in accordance with ASTM C109. The average compressive strength of each set of three cores extracted shall be equal to, or exceed 85 percent of the specified compressive strength with no individual core less than 75 percent of the specified compressive strength in accordance with ACI 506.2.

I. The Contractor shall establish the air content loss during the shotcrete application and deliver concrete at the hopper discharge with an air content to allow for this loss and maintain the specified minimum in the in-place product

J. Aggregate and cement may be batched by weight or by volume. Provide mixing equipment capable of thoroughly mixing the materials in sufficient quantity to maintain placing continuity. Provide ready mix shotcrete complying with ASTM C94 and C685. Shotcrete shall be batched, delivered and placed within 90 minutes of mixing.

K. Aggregate for shotcrete shall meet the strength and durability requirement of ASTM C33.

L. Coarse aggregate shall conform to AASHTO M-80, Class B for quality.

M. Water reducer and super-plasticizer shall comply with ASTM C494 Type A,D,F,G.

N. Air - entraining agents shall comply with ASTM C260.

O. Plasticizers shall conform to G ASTM C494.

P. Mineral admixtures shall conform to the following:
   1. Fly Ash: ASTM C618 Type F or C.
   2. Silica Fume: ASTM C1240, 90 percent minimum silicon dioxide solids content, not to exceed 10 percent by weight of cement.

Q. Curing compounds shall comply with ASTM C1315.

R. Steel Reinforcement shall conform to ASTM A615, GR 60.

S. Prepackaged concrete shall comply with ASTM C928.

7. Permanent Cast-In-Place (CIP) Concrete Facing

A. The permanent CIP concrete facing shall be cast and finished to the limits shown on the Drawings in accordance with the Standard Specifications and Special Provision Section 502-STRUCTURAL CONCRETE (Quality Level Analysis).

636.07 Materials Handling and Storage

Cement shall be adequately stored to prevent moisture degradation and particle hydration. Cement that has become caked or lumpy shall not be used. Aggregates shall be stored so that segregation and the inclusion of foreign materials are prevented. The bottom 6 inches of aggregate piles in contact with the ground shall not be used.

All steel reinforcement shall be carefully handled and shall be stored on supports to keep the steel from contact with the ground. Damage to the nail steel or epoxy coating, as a result of abrasion, cuts, nicks, welds, and wells splatter shall be cause for rejection by the Resident. Grounding of weld leads to the nail steel shall not be allowed. Nail steel shall be protected from and sufficiently free of dirt, rust and other deleterious substances prior to installation. Heavy corrosion or pitting of nails shall be cause or rejection by the Resident. Light rust that has not resulted in pitting is acceptable.

Encapsulated nails shall not be transported until the encapsulation grout has reached sufficient strength to resist damage during handling. Encapsulated nails shall not be handled in a manner that will cause large deflections or distortions during handling. When handling or transporting encapsulated nails, the Contractor shall provide slings or other equipment necessary to prevent damage to the nail tendon. Encapsulated nails shall not be dropped during handling and shall be protected from impact of any kind. Ant encapsulated nails that are damaged or defective shall be repaired in accordance with the manufacturer's recommendations or shall be rejected and removed from the site.

636.08 Drainage Control

1. Localized areas of perched water may be encountered at the interface of geologic units, or in other areas within the required excavation limits, and should be anticipated. The Contractor will be responsible for preventing and/or controlling seepage from the excavated face, to allow proper installation and cure of the shotcrete. This may require pre-drainage using horizontal drains, vertical well points, large diameter wells or other methods to be selected by the Contractor.

2. The Contractor shall be responsible for repair of all damage caused by improper dewatering.

3. The methods of controlling groundwater within the limits of work (both inside and outside the excavation) shall be determined by the Contractor, who shall be solely responsible for the location, arrangement and depth of any system or systems selected to accomplish the work. The construction dewatering system designed and implemented by the Contractor shall be capable of maintaining groundwater levels so as to obtain a satisfactory undisturbed subgrade, and prevent sloughing and raveling of the excavated face. Maintain water levels until, at a minimum, soil nails have been installed and the shotcrete face has obtained the required 28 day strength. If the

methods employed have not been adequate and loss of ground beyond proposed shotcrete face occurs, remove disturbed soil as directed by the Engineer. The Contractor shall develop a plan of action for backfilling resulting voids beyond the finish face line and shall submit to the Engineer such method(s) 24 hours prior to excavating. Any overexcavation beyond the final soil/wall face shall be immediately restored by the Contractor using a method reviewed by the Engineer and at no additional cost to the Owner.

4. The Contractor shall provide positive control and discharge of all surface water encountered during construction to the extent necessary to prevent adverse conditions as determined by the Engineer. Damage caused by the failure to control surface water shall be repaired by the Contractor to the Engineer's satisfaction at no additional cost to the Owner.

5. The Contractor shall be responsible for the condition and maintenance of any pipe or conduit used to control surface water during construction. Upon substantial completion of the Work, surface water control pipes or conduits shall be removed from the site. Alternatively, pipes or conduits which are left in place with the approval of the Engineer, shall be fully grouted (abandoned) or left in a manner that protects the structure and all adjacent facilities from migration of fines through the pipe or conduit and potential ground loss.
6. Comply with federal, state and local codes, ordinances and regulations for disposal of discharged water and sediment control. The Contractor shall be responsible for obtaining all required permits.

636.09 Construction Requirements

The construction sequence shall be in accordance with the approved submittal, unless otherwise approved by the Resident. No excavations steeper than those specified therein shall be made above or below the soil nail wall without written approval of the Resident.

636.091 Quality of Workmanship.

1. The Contractor is responsible for implementing a Quality Control Program (QCP). Workers, including foreman, nozzleman, and delivery equipment operators, shall be qualified to perform the work. All nozzlemen on this Project shall meet the experience requirements specified herein.

2. A clearly defined pattern of continuous horizontal or vertical ridges or depressions at the reinforcing elements after they are covered will be considered an indication of insufficient cover of reinforcement, poor application technique and probable voids. In this case, the application of shotcrete shall be immediately suspended until inspected by the Engineer. The Contractor shall implement and complete corrective measures, including removing and replacing deficient material, prior to resuming the shotcrete operations.

3. Inspection of materials, workmanship, finished products, and installation by the Department or its representatives is required.

4. All grout materials and cores of shotcrete wall shall be tested for conformance with the Specifications by the Department.

5. Damaged areas of fusion bonded epoxy corrosion protection, including exposed cut-off anchor bar ends, shall be cleaned and coated with corrosion protective epoxy in accordance with the bar manufacturer's recommendations.

636.092 Excavation. During excavation, the Contractor shall maintain a bench to serve as a platform for the drilling equipment and a berm against the final wall excavation face. The bench shall be established not more than 3 feet below the row of nails to be installed and shall extend

out from the wall face a minimum distance necessary to provide a safe working bench for the drill equipment and workers.

Excavating of the ground behind the shotcrete wall shall not be allowed. Any inadvertent over-excavation shall be restored by the Contractor using a method reviewed by the Resident and at no additional cost to the Department. Methods to be considered to restore over-excavation shall include but not be limited to replacement with shotcrete and replacement with engineered fill, as reviewed and approved by the Resident.

Excavation to the final wall excavation face shall be performed using procedures that : (1) prevent ground loss, swelling, air slaking, or loosening; (2) minimize degradation of soil bearing support below the overlying portions of the soil nail wall and below the soil nails currently being installed; (3) prevent premature loss of soil moisture at the face; (4) prevent ground freezing; (5) reduce the potential for shotcrete overages; (6) prevent raveling and/or sloughing of soils; and (7) maintain satisfactory control of seepage at the excavated face to allow proper placement of shotcrete.

Subsequent excavation lifts shall not be advanced until nail installation (including bearing plate and nut), reinforced shotcrete placement, and nail testing for the preceding lifts are complete and acceptable to the Resident. Prior to advancing the excavation, nail grout and shotcrete on the preceding lift shall have cured for at least 72 hours or attained their specified 3-day compressive strength. Exposed native ground shall not have an unsupported cut height greater than the vertical nail spacing plus the required reinforcing lap.

Where the Contractor's excavation and installation methods result in a discontinuous wall along any nail row, the ends of the wall shall extend beyond the ends of the next lower lift by at least 10 feet. Slopes at these discontinuities shall be constructed to prevent sloughing or failure of the temporary slopes.

Removal of cobbles, boulders, rubble, or debris which are encountered at the soil face during excavation and which protrude from the soil face shall be the responsibility of the Contractor. The Contractor shall be responsible for constructing the structural shotcrete facing to the specified minimum thickness and to the lines and grades indicated in the plans. The Contractor shall notify the Resident of the proposed method for removal of face protrusions at least 24 hours prior to commencing with excavation for review and approval. Should the removal of face protrusions result in voids beyond the finish shotcrete wall face/soil line, the Contractor shall backfill the voids within the work shift during which the voids were created using methods reviewed and approved by the Resident.

The Contractor shall be responsible for design and installation of temporary lateral support and the slope stability of all temporary cuts. Completed ends of the soil nail wall shall be protected to prevent loss of ground from behind the soil nail wall and/or movement of ground behind the completed soil nail wall.

If the Soil Nail Wall Design requires placement of a stabilizing berm, or if in the opinion of the Contractor or Resident a stabilizing berm is necessary or prudent, then the following three items shall apply:

1. The Contractor shall not excavate any lift to the final wall excavation face prior to installation of nails but shall maintain a stabilizing berm to support the excavation face during nail installation, unless otherwise approved by the Resident. The stabilizing berm is provided to:
   (a) minimize degradation of soil bearing support below the overlying portions of the soil nail wall and below the soil nails currently being installed;
   (b) prevent premature loss of soil moisture at the face; and
   (c) reduce the potential for ground loss and subsequent shotcrete overages.

   Alternative excavation and soil nail installation methods that meet these objectives may be submitted to the Resident for review in accordance with the Submittals section of this Contract.

2. The stabilizing berm shall extend horizontally from the bottom exterior of the overlying shotcrete a minimum distance of 1 foot and shall be cut down from that point at a slope determined to be safe by the Contractor, but not steeper than 1H:1V, unless otherwise approved by the Resident. Following the installation of nails, the stabilized berm shall be excavated to the final wall face and cleaned of all loose materials, mud, shotcrete rebound, and other foreign matter which could prevent or reduce shotcrete bond.

3. The Contractor shall ensure that installed nails are not damaged during excavation of the stabilizing berm. Nails damaged or disturbed during excavation of berm shall be repaired or replaced by the Contractor to the satisfaction of the Resident at no additional cost to the Department. The stabilizing berm shall not be excavated until the nail grout has aged for at least 24 hours. Hardened nail grout protruding from the wall excavation more than 2 inches shall be removed in a manner that prevents fracturing the grout at the nail head. Sledge hammer removal of the grout shall not be allowed. The use of hand held rock chippers is acceptable provided their used does not damage or disturb the remaining grout at the nail head, the nail bar, or the surrounding exposed ground.

636.093 Nail Installation. Successful verification tests shall be performed prior to starting installation of production nails. The number and location of required verification tests are specified in the Soil Nail Wall Design. Additional verification tests may be required if the Contractor modifies the installation method from those used during the installation if the approved verification test nails and will be conducted at the Contractor's expense.

Nails shall be installed prior to the application of shotcrete at the locations and to the lengths specified in the Soil Nail Wall Design. The Resident may add, eliminate, or relocate nails to accommodate actual field conditions. Cost adjustments associated with these modifications shall be made in accordance with the General Provisions of the contract. Design modifications

resulting from actions of the Contractor shall be determined by the Resident. The cost of any redesign, additional material and installation modifications shall be borne by the Contractor.

Reinforced shotcrete may be installed prior to installing the soil nails upon written approval from the Resident. The written request to modify the installation sequence should include a proposed construction sequence and calculations demonstrating that the bearing plates are adequate to span the nail hole or block-out.

Drilling. The Contractor shall select drilling equipment and methods suitable for the ground conditions described in the geotechnical report and shown in the test boring and test pit logs. Drillhole diameter shall be selected to provide the minimum specified grout cover over the soil nail tendon and to develop the specified load carrying capacity. A minimum drillhole diameter is specified in the Soil Nail Wall Design. It is the Contractor's responsibility to determine the final drillhole diameter required to provide the adhesion values shown on the Drawings. Water, drilling mud or other fluids used to assist in cuttings removal shall not be allowed. Uncased drillholes shall be observed for cleanliness prior to insertion of the soil nail tendon. In caving ground, the Contractor shall use cased drilling methods to support the sides of the drillholes.

The Contractor shall immediately suspend drilling operations if ground subsidence is observed, if the Soil Nail Wall is adversely affected, or if adjacent structures are damaged as a result of the drilling operation. The adverse conditions shall be stabilized immediately and the Resident shall be notified of such conditions within 24 hours.

Nail Tendon Installation. Nail tendon shall be provided as indicated on the schedules included in the Soil Nail Wall Design. Each tendon shall be fitted with centralizers as specified. Nail tendons shall be inserted into the drillhole to the length required without difficulty and in such a manner as to prevent damage to the drillhole or the tendon corrosion protection. Tendons which cannot be fully inserted to the design depth shall be removed from the drillhole and the drillhole shall be cleaned sufficiently to allow unobstructed installation of the tendon.

Where the nail tendon is installed using cased or hollow-stem auger methods, centralizers are not required provided the installation method insures that the tendon will remain in the center portion of the nail grout. In such situations, grout slump shall not exceed 8 inches.

636.094 Grouting Equipment. Grout Equipment shall produce a uniformly mixed grout free of lumpy and undispersed cement. A positive displacement grout pump shall be used. The pump shall be equipped with a pressure gauge which can measure at least twice but no more than three times the intended grout pressure. The grouting equipment shall be sized to enable the entire nail to be grouted in one continuous operation. The mixer shall be capable of continuously agitating the grout during usage.

Grouting Methods. The drillhole shall be grouted after installation of the nail tendon. Grouting prior to insertion of the nail tendon can be allowed provided neat cement grout is used and the nail bar is immediately inserted through the grout to the specified length without difficulty. No portion of the nail hole shall be left open for more than 60 minutes prior to grouting unless otherwise approved by the Resident. The grout shall be injected at the lowest point of each drillhole through a grout tremie pipe, casing, hollow-stem

auger, or drill rods with the drillhole filled in one continuous operation. Cold joints in the grout placement are allowed for construction of the proof test nails. The end of the conduit delivering the grout shall be kept below the surface of the grout as the conduit is withdrawn. The grouting conduit shall be withdrawn as the nail hole is filled in a manner which prevents the creation of voids. The quantity of grout and the grouting pressures shall be recorded for each soil nail. Grout pressures shall be controlled to prevent excessive ground heave or fracturing.

During casing removal from drillholes advanced by either cased or auger-cast methods, the grout surface within the casing shall be continually monitored for maintenance of "head" sufficient to offset the external groundwater/soil pressure. Casing seals shall not

be broken until the level of grout within the casing provides adequate head to prevent unstable soil or groundwater from contaminating or diluting the grout. Grout pressures shall be maintained to ensure that the drillhole will be completely filled with grout.

If the grouting of any nail is suspended for more that 30 minutes or if the quality of the grout placement results in a nail that does not satisfy the requirements of the Special Provision, then the steel tendon and grout shall be removed from the hole, disposed of, and replace with fresh grout and undamaged steel at no additional cost to the Department.

Grout Testing. Nail grout shall have a minimum compressive strength of 1500 psi in 3 days and 3000 psi in 28 days. Nail grout shall be tested by the Contractor in accordance with AASHTO T 106/ASTM C 109 at a frequency of no less than one (1) test for every 50 cubic yards of grout placed or once (1) per week, which ever comes first, and no less than two (2) tests per wall.

Proof Test Nail Unbonded Length. Temporary unbonded lengths shall be provided for each proof nail test. The test nail bar shall be isolated from the shotcrete facing and the reaction frame used during testing. Isolation of a test nail through the shotcrete facing shall not effect the location of the reinforcing steel under the bearing plate. Accepted proof test nails may be incorporated in the Work provided the temporary test unbonded length is fully grouted subsequent to testing. Test nail isolation methods, methods for providing an unbonded length and methods for grouting the unbonded length subsequent to testing shall be submitted to the Resident for review and approval in accordance with the requirements of the Submittal section of this Contract.

636.10 Nail Testing

Verification and proof testing shall be performed. Verification tests shall be performed at locations specified in the Soil Nail Wall Design. Proof tests shall be performed at locations selected by the Resident. All required test data shall be recorded by the Resident, unless approved otherwise. Testing of nails shall not be performed until the nail grout and shotcrete facing have attained at least 50 percent of their specified 28-day compressive strength.

Where temporary casing of the unbonded length of test nails is provided, the casing shall be installed in a way to prevent any reaction between the casing and the grouted bond length of the nail and/or the stressing apparatus.

Testing Equipment. Testing equipment shall include two (2) dial gauges, a dial gauge support, jack and pressure gauge, an electric load cell and a reaction frame. The load cell is required for verification tests only.

A minimum of two (2) dial gauges capable of measuring to 0.001 inch shall be available at the site to measure nail movement. The dial gauges shall have a minimum travel sufficient to allow the test to be preformed without re-setting the dial gauge. The dial gauges shall be aligned within 5 degrees of the axis of the nail and shall be supported independent of the jacking set-up and the wall. A hydraulic jack, pressure gauge and pump shall be used to apply and measure the test load. The nail loads during verification tests shall be monitored with both a pressure gauge and electric load cell. The load cell shall be used to maintain constant load hold throughout the creep test during verification testing. The contractor shall provide recent (within 6 months of the start of construction) calibration curves in accordance with the Submittals.

The jack pressure gauge shall be calibrated by an independent testing laboratory as a unit. The pressure gauge shall be graduated in 100 psi increments or less and shall have a range not exceeding twice the anticipated maximum pressure during testing unless approved by the Resident. The ram travel of the jack shall be sufficient to enable the test to be performed without re-setting the jack. The jack shall be capable of applying each test load increment in less than 1 minute.

The jack shall be independently supported and centered over the nail so that the nail does not carry the weight of the jack. The stressing equipment shall be placed over the nail in such a manner that the jack, bearing plates, load cell and stressing anchorage are in alignment. The jack shall be positioned at the beginning of the test such that unloading and repositioning of the jack during the test will not be required.
The reaction frame shall be sufficiently rigid and of adequate dimension such that excessive deformation of the test apparatus requiring repositioning of any components does not occur during testing. Where the reaction frame bears directly on the shotcrete facing, the reaction frame shall be designed to prevent fracture of the shotcrete and no part of the reaction frame shall bear within 6 inches of the edge of the test nail block-out, unless otherwise approved by the Resident.

Verification Testing of Sacrificial Nails. Verification testing shall be performed prior to installation of production nails to verify the Contractor's installation methods, soil conditions, nail pullout capacity and design assumptions. Verification tests shall be performed within the limits of the Work and at the locations specified in the Soil Nail Wall Design, unless otherwise approved by the Resident. The nails used for the verification tests shall be sacrificial and shall not be incorporated as production nails.

The details of the verification testing arrangement including the method of distributing test load pressures to the excavation surface (reaction frame), test nail bar size, grouted hole diameter and reaction plate dimensioning, shall be developed by the Contractor and submitted to the Resident for approval. Test nails shall be constructed using the same equipment, methods and hole diameter as planned for the production nails. Changes in the drilling or installation method may require additional verification testing as determined by the Resident and shall be provided at no additional cost to the Department.

Test nails shall have both bonded and unbonded lengths. Prior to testing, only the bonded length of the test nail shall be grouted. The unbonded length of the test nail shall be 3 feet unless otherwise approved by the Resident. The bonded length of the test nail shall be as specified in the Soil Nail Wall Design based on the bar grade and size such that the allowable bar structural load is not exceeded, but shall not be less than 10 feet. The allowable bar structural load during testing shall not be greater than 90 percent of the yield strength of the Grade 75 bars.

The verification test bonded length, L_{BV}, shall not exceed the test allowable bar structural load divided by two times the design adhesion value. The following equation shall be used for determining the test nail bond length to avoid structurally overstressing the verification nail bar size:

$$L_{BV} \leq \frac{Cf_y A_s}{2A_D}$$

Where:

L_{BV}	=	Maximum Verification Test Nail Bond Length (ft)
C	=	0.9 for Grade 75 bars
f_y	=	Bar Yield Stress (ksi)
A_s	=	Bar Area (square inches)
A_D	=	Design Adhesion (kips/foot)

The design test load during testing shall be determined by the following equation:

$$DTL = L_B x A_D$$

Where:

DTL	=	Design Test Load
L_B	=	As-built bonded test length (ft)
A_D=		Design Adhesion (specified in the Soil Nail Wall Design as kips /foot)

Verification test nails shall be incrementally loaded to twice the design test load (DTL) followed by unloading in accordance with the following schedule. The soil nail movements at each load and unload increment shall be recorded.

LOADING		**UNLOADING**	
Load	Hold Time	Load	Hold Time
AL (0.05 DTL max.)	1 minute	1.75DTL	Until Stable
0.25DTL	10 minutes	1.50DTL	Until Stable
0.50DTL	10 minutes	1.25DTL	Until Stable
0.75DTL	10 minutes	1.00DTL	Until Stable
1.00DTL	10 minutes	0.75DTL	Until Stable
1.25DTL	10 minutes	0.50DTL	Until Stable
1.50DTL	60 minutes	0.25DTL	Until Stable
1.75DTL	10 minutes	AL	Until Stable

2.00DTL	10 minutes		

AL = Nail Alignment Load
DTL = Design Test Load

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the design test load (DTL). Dial gauges should be set at "zero" after the alignment load has been applied.

Each load increment shall be held for at least 10 minutes. The verification test nail shall be monitored for creep at the 1.50DTL load in increment. Nail movements during the creep portion of the test shall be measured and recorded at 1 minute, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes. The load during the creep test shall be maintained within 2 percent of the intended load by use of the load cell. The nail shall be unloaded in increments of 25 percent of the DTL with movements recorded at each unload increment. Each unload increment shall be held only for a sufficient time to allow stabilization of the movement reading.

Proof Testing of Production Nails. Proof testing shall be performed on 5 percent of the production nails or a minimum of 2 nails in each staged excavation lift, whichever is greater. The locations and number of these tests shall be determined by the Resident.

Proof test nails shall have both bonded and unbonded lengths. Prior to testing, only the bonded length of the test nail shall be grouted. The bonded and unbonded lengths of each test nail shall be as specified in the Soil Nail Wall Design, subject to the approval of the Resident. The unbonded length of the test nail shall be at least 3 feet. The bonded length shall be such that the allowable bar structural load is not exceeded but shall not be less than 10 feet. The allowable bar structural load shall not exceed 90 percent of the yield strength for Grade 75 bars.

The proof test bonded length, L_{BP}, shall not exceed the test allowable bar load divided by 1.3 times the design adhesion value. The following equation shall be used for sizing the test nail bond length to avoid overstressing the production bar size:

$$L_{BP} \leq \frac{C f_y A_s}{1.3 A_D}$$

Where:

L_{BP}	=	Maximum Proof Test Nail Bond Length (ft)
C	=	0.9 for Grade 75 bars
f_y	=	Bar Yield Stress (ksi)
A_s	=	Bar Area (square inches)
A_D	=	Design Adhesion (kips/foot)

Proof tests shall be performed by incrementally loading the nail to 130 percent of the design test load (DTL). The design test load shall be determined as for verification nails.

The nail movement at each load shall be recorded by the Resident in the same manner as for verification tests. The load shall be monitored by a pressure gauge with a sensitivity and range meeting the requirements of pressure gauges used for verification test nails. At load increments other than maximum test load, the load shall be held long enough to

obtain a stable reading. Incremental loading for proof tests shall be in accordance with the following schedule:

LOADING
AL (0.05 DTL max.)
0.25DTL
0.50DTL
0.75DTL
1.00DTL
1.30DTL

AL = Nail Alignment Load
DTL = Design Test Load

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the design test load (DTL). Dial gauges should be set at "zero" after the alignment load has been applied.

All load increment shall be maintained within 5 percent of the intended load. Depending upon performance, either 10 minute or 60 minute creep tests shall be performed at the maximum test load (1.30DTL). The creep period shall start as soon as the maximum test load is applied to the nail. Nail movement shall be measured and recorded at 1 minute, 2, 3, 5, 6, and 10 minutes. Where the nail movement between 1 minute and 10 minutes exceeds 0.04 inch, the maximum test load shall be maintained for an additional 50 minutes and movements recorded at 20 minutes, 30, 50 and 60 minutes.

Test Nail Acceptance Criteria. A test nail shall be considered acceptable when:

1. For verification purposes, a creep rate less than 0.08 inch per log cycle of time between the 6 and 60 minute readings is observed during creep testing and the rate is linear or decreasing throughout the creep test load hold time.

2. For Proof tests: (a) a total creep movement of less than 0.04 inch is observed between the 1 and 10 minute readings or a total creep movement of less than 0.08 inch is observed between the 6 and 60 minute readings and; (b) the creep rate is linear or decreasing throughout the creep test load hold time.

3. The total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the test nail unbonded length.

4. A pullout failure does not occur at the maximum test load. Pullout failure is defined as the load at which attempts to increase the test load simply result in continued pullout movement of the test nail. The pullout failure load shall be recorded as part of the test data.

At the Contractor's option, successful proof test nails meeting the above test acceptance criteria may be incorporated as production nails, provided that (1) the unbonded test length of the nail hole has not collapsed during testing, (2) the minimum required hole

diameter has been maintained, (3) the specified corrosion protection is provided, and (4) the test nail length is equal to or greater than the scheduled production nail length. Test nails meeting these requirements shall be completed by satisfactorily grouting the unbonded test length. Maintaining the temporary unbonded test length for subsequent grouting is the Contractor's responsibility. If the unbonded test length of production proof test nails cannot be satisfactorily grouted subsequent to testing, the proof test nail shall become sacrificial and the Contractor shall replace the proof test nail with a production nail installed to the satisfaction of the Resident and at no additional cost.

Test Nail Rejection Criteria.

Verification Test Nails. The Resident shall evaluate the results of each verification test. Installation methods which do not satisfy the nail testing requirements shall be rejected. The Contractor shall propose alternative methods and install replacement verification test nails. Replacement of test nails shall be installed and tested at no additional cost o the Department.

Proof Test Nails. The Resident may require that the Contractor replace some or all of the installed production nails between the failed proof test nail and the adjacent passing proof test mail. Alternatively, the Resident may require proof testing of additionally installed proof test nails be conducted to verify that adjacent previously installed production nails have sufficient load carrying capacity. The Resident may require that modifications be made to the Soil Nail Wall Design by the Soil Nail Wall designer, as appropriate. These modifications may include the installation of additional test and/or production nails (i.e., decreased nail spacing from that specified in the Soil Nail Wall Design), installing longer production nails, increasing the drillhole diameter, or modifying the installation methods. Costs due to additional proof tests or installation of additional or modified nails as a result of proof test nail failure(s) shall be at no cost to the Department, unless determined by the Resident to be due to causes beyond the Contractor's control.

636.11 Tolerances

Soil Nails. The soil nails shall not extend beyond the right-of-way or easement limits shown on the Drawings. Bars shall be centered within 1 inch of the center of the drillhole. Individual nails shall be positioned plus or minus 12 inches from the design locations shown in the Soil Nail Wall Design. Location tolerances shall be considered applicable to only one nail and not accumulative over large wall areas. The nail inclination shall be plus or minus 3 degrees of that shown in the Soil Nail Wall Design. Nails which encounter obstructions during drilling shall be relocated by the Soil Nail Wall designer. Soil nails which do not satisfy the specified tolerances due to the Contractor's installation methods shall be replaced to the Resident's satisfaction at no additional cost to the Department.

636.12 Nail Installation Records

Accurate daily records documenting the Soil Nail Wall construction shall be maintained by the Contractor and provided to the Resident within 24 hours. Daily records shall, as a minimum, include the items listed below:

1. Contractor's name

2. Drill rig operator's name
3. As-built, surveyed nail location
4. Deviation from specified tolerances
5. Nail diameter
6. As-built, surveyed nail elevation
7. Design nail length
8. Installed nail length
9. Groundwater conditions
10. Caving or sloughing of excavation
11. Casing requirements
12. Drilling difficulties
13. Date and time of start and finish of drilling
14. Length and diameter of reinforcing bars in hole
15. Date, time, and method grout was placed including grout pressure
16. Total daily quantity of grout placed and quantity per hole
17. Design changes

The Contractor shall assist the Resident as necessary to obtain the above information and all other information as required by the Resident.

636.13 Shotcrete Construction and Wall Drainage

Shotcrete and wall drainage Work shall consist of furnishing all materials and labor required for placing and securing Geocomposite drainage material, connection pipes, footing drains, weepholes and horizontal drains (if requires), plain or fiber reinforced shotcrete for the wall and gutter a the top of the slope. The Work shall include any preparatory trimming and cleaning of soil/rock surfaces and shotcrete cold joints for the soil nail wall(s) specified in the Soil Nail Wall Design.

Shotcrete shall comply with the requirements of ACI 506.2-90, "Specification for Shotcrete", except as otherwise specified. Shotcrete shall consist of an application of one or more layers of mortar or concrete conveyed through a hose and pneumatically projected at a high velocity against a prepared surface.

Shotcrete may be produced by either a dry-mix or a wet-mix process. The wet-mix process consists of thoroughly mixing all the ingredients except accelerating admixtures but including the mixing water, introducing the mixture into the delivery equipment and delivering it, by positive displacement, to the nozzle. The wet-mix shotcrete shall then be air jetted from the nozzle at high velocity onto the surface. Dry-mix process is shotcrete without mixing water which is conveyed through the hose pneumatically and the mixing water is introduced at the nozzle. For additional descriptive information, the Contractor's attention is directed to the American Concrete Institute Standard "Guide to Shotcrete (ACI 506R-90)".

Quality Control Program (QCP). The Contractor is responsible for implementing a Quality Control Program. Workers, including foreman, nozzleman, and delivery equipment operators shall be fully qualified to perform the work. All nozzlemen on this project shall have at least one year of accumulative experience in the past three years in similar shotcrete application work and shall demonstrate ability to satisfactorily place material.

Qualifications of the nozzlemen shall be based on a visual inspection of the shotcrete density and void structure and on achieving the specified 3-day and 28-day compressive strength requirements determined from the average test results from three cores extracted from each preconstruction and production test panel. Preconstruction and production test panels, core extractions and compressive strength testing shall be conducted in accordance with ACI 506.2-90 unless otherwise specified herein.

The Contractor shall notify the Resident not less than two (2) days prior to the shooting of a qualification test panel. Shotcrete mix and equipment used to make qualification test panels shall be the same as those to be used for the Soil Nail Wall.

Materials. All materials for shotcrete shall conform to the following requirements:

Cement	AASHTO M 85, ASTM C 150, Type I, II, III, or V.
Fine Aggregate	AASHTO M 6, ASTM C 33, clean, natural.
Coarse Aggregate	AASHTO M 80, Class B for quality.
Water	Potable, clean and free from substances deleterious to concrete and steel or elements that would cause staining.
Chemical Admixtures	ASTM C 1141 and the following:
Accelerator	Fluid type, applied at nozzle, meeting requirements herein.
Water-reducer and Superplasticizer	AASHTO M 194 Type A,D,F,G or ASTM C 494 Type A,D,F,G.
Air-Entraining Agent	AASHTO M 194, ASTM C 260.
Plasticizers	AASHTO M 194, Type A, D, F, or G, ASTM C 494.
Mineral Admixtures:	Fly AshAASHTO M 295, ASTM C 618 Type F or C.
Silica Fume	ASTM C 1240, 90 percent minimum silicon dioxide solids content, not to exceed 12 percent by weight of cement. In addition, silica fume shall conform to the requirements of Section 502.
Welded Wire Fabric	AASHTO M 55/ASTM A 185 or ASTM A 497.
Reinforcing Bars	AASHTO M 31/ASTM A 615, Grade 75, deformed. Epoxy Coating shall conform to the requirements of Section 503.05.
Bearing Plates	AASHTO M 183/ASTM A 36.
Nuts	AASHTO M 291, Grade B, hexagonal fitted with beveled washer or spherical seat to provide uniform bearing.

Curing Compounds	AASHTO M 148, Type ID or Type 2.
Prepackaged Concrete	ASTM C 928
Drainage Geotextile	Geocomposite drain strip Water Flow Rate (ASTM D-4716) – Hyd. Grad. Of 1.0 – 15 gpm/ft width Water Flow Rate (ASTM D-4716) – Hyd. Grad. Of 0.1 – 3 gpm/ft width Grab strength (ASTM D 4632) - 155 lbs Apparent Opening Size (ASTM D 4751-87) – No. 100 Sieve
Film Protection	AASHTO M 171 or polyethylene film.
Drainage Aggregate	AASHTO M 43/ASTM D 448 No. 67 with no more than two (2) percent passing the 75 μm (US No. 200) sieve.

PVC Connection Pipe, Horizontal Drains and Weep Holes:

Pipe	ASTM D 1785 Schedule 40 PVC, solid and perforated wall, cell classification 12454-B or 12354-C, wall thickness SDR 32, with solvent weld or elastomeric gasket joints.
Fittings	ASTM D 3034, cell classification 12454-B or 12354-C, wall thickness SDR 35, with solvent weld or elastomeric gasket joints.
Solvent Cement	ASTM D 2564
Primer	ASTM F 656

Shotcrete admixtures shall not be used unless approved by the Resident. Admixtures used to entrain air, to reduce water-cement ratio, to retard or accelerate setting time, or to accelerate the development of strength, shall be thoroughly mixed into the shotcrete at the rate specified by the manufacturer unless specified otherwise. Accelerating additives shall be compatible wit the cement used, be non-corrosive to steel and shall not promote other detrimental effects such as cracking or excessive shrinkage. The maximum allowable chloride ion content of all ingredients shall not exceed 0.10 percent when tested to AASHTO T 260.

Premixed and prepackaged concrete products specifically manufactured as a shotcrete product may be provided for on-site mixed shotcrete if approve by the Resident. The packages shall contain materials conforming to the Materials portion of this specification.

Materials shall be delivered, stored and handled to prevent contamination, segregation, corrosion, or damage. Liquid admixtures shall be stored to prevent evaporation and freezing.

Drainage Geotextile and geocomposite drains shall be provided in rolls, wrapped with a protective covering and stored in a manner which protects the fabric from mud, dirt, dust, debris, and shotcrete rebound. Protective wrapping shall not be removed until immediately before the geotextile or drain strip is installed. Extended exposure to ultra-violet light shall be avoided. Each roll of geotextile or drain strip in the shipment shall be labeled to identify the production run.

Submittals. At least 30 days prior to initiating the Work, the Contractor shall submit to the Resident:

1. Written documentation of the nozzleman's qualifications and proposed method of shotcrete placement.

2. Certified shotcrete mix design including:
    1. Brand and type of Portland cement used;
    2. Source, gradation and quality of aggregates as specified herein;
    3. Proportions of mix by weight; and
    4. Proposed admixture, manufacturer, dosage, technical literature (when admixture allowed).

3. Certified mill tests for all reinforcing steel specifying the minimum ultimate strength, yield strength, elongation and composition.

4. Complete engineering data for the drainage geotextile an geocomposite drain strip including manufacturer's certification of compliance and installation instructions.

5. Certifications of Compliance for bearing plates, nuts, curing compounds (if used), drainage aggregate and PVC drain piping.

6. Methods of controlling location of front face and determining shotcrete thickness.

Shotcrete Mix Design.

Aggregate. Aggregate for shotcrete shall meet the strength and durability requirements of AASHTO M 80 and M 43 and shall meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
12 mm (1/2 inch)	100
10 mm (3/8 inch)	90 - 100
5 mm (No. 4)	70 - 85
2.5 mm (No. 8)	50 - 70
1.25 mm (No. 16)	35 - 55
0.630 mm (No. 30)	20 - 35
0.300 mm (No. 50)	8 - 20

0.160 mm (No. 100)	2 - 10

Proportioning. Shotcrete shall be proportioned and delivered with the following minimum contents per cubic yard:

Cement content shall be at least 658 pounds per cubic yard.
Water/Cement ratio shall not be greater than 0.45.

The mix shall be proportioned to be pumpable with the concrete pump furnished for the work.

Strength Requirements. Shotcrete shall be proportioned to produce a mix capable of attaining 2000 psi compressive strength in 3 days and 4000 psi in 28 days when tested in accordance with ASTM C109. The average compressive strength of each set of three cores extracted must equal to or exceed 85 percent of the specified compressive strength in accordance with ACI 506.2.

Mixing and Batching. Mixing equipment shall be capable of thoroughly mixing the materials in sufficient quantity to maintain the placing continuity. Shotcrete shall be batched, delivered and placed within 90 minutes of mixing unless otherwise approved by the Resident.

Field Quality Control. Both preconstruction and production shotcrete test panels shall be required. Qualified personnel shall perform shotcreting and coring of the test panels with the Department's personnel present. The contractor shall provide equipment, materials and personnel as necessary to obtain shotcrete cores for testing including construction of test panel boxes, field curing requirements and coring. The Department will perform compressive strength testing. Shotcrete final acceptance will be based on obtaining the specified 28 day compressive strength.

Shotcreting may commence upon initial approval of the design mix and nozzlemen.

Test Panel Curing, Test Specimen Extraction and Testing. Immediately after shooting, the test panels shall be field moist cured by covering and tightly wrapping with a sheet of material meeting the requirements of ASTM C 171 until delivered to the testing lab or test specimens are extracted. The test panels shall not be immersed in water. The test panels for the first 24 hours after shooting shall not be disturbed.

At least three 3 inch diameter core samples shall be cut from each unreinforced production test panel for compressive strength testing. The Contractor shall extract the test specimens from test panels in the field within 48 hours of shooting the panel. The panels shall be kept in their forms when transported. Cores shall not be taken from the outer 6 inch of test panels measured in from the outside edges of the panel's form.

The cores and container shall be clearly marked to identify the core locations. For production testing, the production section of the unformed superstructure repair represented by the production test panel cores shall be marked on the cores and the container. Immediately wrap cores in wet burlap or material in accordance with the requirements of ASTM C 171 and seal in a plastic bag. The Department shall take possession of the cores immediately after extraction. The remainder of the panels shall

become the property of the contractor. The Department will perform the compressive strength testing.

Upon delivery to the testing lab, samples will be placed in the moist room until the time of test. When the test length of a core is less than twice the diameter, the correction factors given in AASHTO T 24/ASTM C 42 will be applied to obtain the compressive strength of individual cores. Three cores will be tested at 28 days for compressive strength per AASHTO T 24/ASTM C 42.

Unsatisfactory compressive strength tests shall result in suspension of the crew responsible for the unsatisfactory work, or until additional specimens have been submitted, tested and proven satisfactory. Lost production due to failing to meet the Specifications shall be borne by the Contractor.

Preconstruction Test Panels. Each application crew shall furnish at least two (2) preconstruction test panels for each proposed mixture being considered and for each shooting position to be encountered on the job. Preconstruction test panels shall be made by each application crew using the equipment, materials, mixture proportions and procedures proposed for the job prior to the commencement of work.

Preconstruction test panels shall be 30 x 30 inch in accordance with ACI 506.2-90, with following exceptions:

1. One preconstruction test panel shall be of the maximum shotcrete thickness indicated in the Soil Nail Wall Design and shall include the maximum anticipated reinforcing congestion. Cores extracted from the test panel shall demonstrate encapsulation of the reinforcement in accordance with ACI 506.2 equal to core grade 2 or better.

2. One preconstruction test panel shall be at least 4 inches thick and constructed without reinforcement for compressive strength testing.

3. The corners of the preconstruction and production test panels shall be chamfered 45 degrees over the full panel thickness.

Production Test Panels. The Contractor shall furnish at least one production test panel or, in lieu of production test panels, six (6) 3-inch diameter cores from the shotcrete face for every 50 cubic yards of shotcrete placed. The production test panels shall be constructed simultaneously with the shotcrete pacing installation at times designated by the Resident. The production test panel shall have minimum dimension of 18 x 18 x 4 inches.

Core Testing. At least six (6) core samples will be cut from each pre-construction test panel and production test panel. Cores shall be soaked in water for at least 40 hours in accordance with AASHTO T 24. Cores shall be at least 3 inches in diameter and shall have a minimum length the diameter ration of one (1). When the length of a core is less than twice the diameter, apply the correction factors given in ASTM C 42 to obtain the compressive strength of individual cores. Three (3) cores shall be tested a 3-days and three (3) cores shall be tested at 28-days.

Core holes in the wall shall be filled solid with patching mortar or shotcrete after cleaning and thoroughly dampening.

Visual Observation. A clearly defined pattern of continuous horizontal or vertical ridges or depressions at the reinforcing elements after they are covered will be considered an indication of insufficient cover of reinforcement or poor application and probable void. In this case, the application of shotcrete shall be immediately suspended and the work carefully inspected by the Resident. The Contractor shall implement and complete corrective measures prior to resuming the shotcrete operations.

The shotcreting procedure may be corrected by adjusting the nozzle distance and orientation perpendicular to the surface, adjusting the water content of the shotcrete mix or other means acceptable to the Resident. Excessive re-tempering of the mix shall be avoided. The shotcreted surface shall be broomed and roughened if needed to ensure proper bond of subsequent layers.

636.14 Construction Requirements.

Shotcrete Alignment Control. The Contractor shall ensure that the thickness of shotcrete satisfies the minimum requirements of the Soil Nail Wall Design using alignment wires, thickness control pins, or other means acceptable to the Resident. The Contractor shall ensure that the front face of the shotcrete dose not extend beyond the tolerance limits shown on the Plans.

Surface Preparation. Prior to shotcreting the ungrounted zone above the nail grout at the excavation cut face (birds beak), the Contractor shall remove all loose materials from the surface of the grout and prepare the joint in accordance with all requirements for joint preparation specified herein.
The Contractor shall remove all loose materials and loose dried shotcrete from previous placement operations from all receiving surfaces to receive shotcrete by methods acceptable to the Resident. The removal shall be accomplished in such a manner as not to loosen, crack, or shatter the surfaces to receive the shotcrete. Any surface material which, in the opinion of the Resident, is so loosened or damaged shall be removed to a sufficient depth to provide a base that is suitable to receive the shotcrete. Material that loosens as the shotcrete is applied shall be removed. No shotcrete shall be placed on frozen surfaces.

Delivery and Application. A clean, dry, oil-free supply of compressed air sufficient for maintaining adequate nozzle velocity for all parts of the Work shall be maintained at all times. The equipment shall be capable of delivering the premixed material accurately, uniformly and continuously through the delivery.

The shotcrete shall be applied from the lower part of the Work area upwards to prevent accumulation of rebound on uncovered surfaces. Where shotcrete is used to complete the ungrounted zone of the nail drill hole the face, the nozzle shall be positioned into the mouth of the drillhole to completely fill the void. Rebound shall not be worked back into the placement nor shall the rebound be salvaged. Rebound which does not fall clear of the working area shall be removed. The nozzle shall be held at a distance and at an angle approximately perpendicular to the working face so that rebound will be minimal and compaction will be maximized. Thickness, methods of support, air pressure, and rate of

placement of shotcrete shall be controlled to prevent sagging or sloughing of freshly-applied shotcrete.

Defective Shotcrete. Surface defects shall be repaired as soon as possible after initial placement of shotcrete. All shotcrete which lacks uniformity, which exhibits segregation, sagging, honeycombing, or lamination, or which contains any voids or sand pockets shall be removed and replaced with fresh shotcrete by the Contractor to the satisfaction of the Resident.

Construction Joints. Construction joints shall be uniformly tapered toward the excavation face over a minimum distance equal to the thickness of the shotcrete layer. To the maximum extent practical, the surface of the nail grout at the excavation cut face shall be cleaned and prepared to receive shotcrete in a manner equal to all other construction joints.

Finish. Shotcrete finish shall be either an undisturbed gun finish as applied from the nozzle or a screened finish. Shotcrete extending into the finish face section beyond the tolerances shown on the Soil Nail Wall Design shall be removed.

Attachment of the Bearing Plate and Nut. The bearing plate and nut shall be attached as shown in the Soil Nail Wall Design. The plate shall be seated by hand wrench tightening the nut such that uniform contact with the shotcrete is achieved while the shotcrete is still

plastic and prior to its initial set. Where uniform contact between the plate and the shotcrete cannot be provided, the plate shall be seated on a mortar pad to provide uniform support. Once the mortar pad has attained strength (minimum 1 day), the nut shall be hand wrench tightened. Where studded bearing plates are used to connect the soil nail to the cast-in-place finish facing, the Contractor shall ensure that the bearing plate is in full contact with the construction facing and that the studs are located within the tolerances shown on the Soil Nail Wall Design.

Weather Limitations. Shotcrete shall not be placed in cold weather unless adequately protected when the ambient temperature is below 40ºF and falling and/or when the shotcrete is likely to be subjected to freezing temperatures before a minimum strength of 700 psi. Cold weather protection shall be maintained until the strength of the in-place shotcrete is greater than 750 psi. Cold weather protection shall include heating under tents, blankets or other means acceptable to the Resident. The temperature of the shotcrete, when deposited, shall not be less than 50ºF or more than 90ºF.

Shotcrete application shall also be suspended during high winds and heavy rains when in the opinion of the Resident the quality of the application is not acceptable. Newly placed shotcrete exposed to rain that washes out cement or otherwise makes the shotcrete unacceptable to the Resident shall be removed and replaced. The Contractor shall provide adequately secured polyethylene sheeting or equivalent when adverse exposure to weather is anticipated.

Tolerances. Tolerances for construction facing and temporary shotcrete shall be as shown on the Plans and as required by the Soil Nail Wall Design.

Safety Requirements. Special attention shall be given to eye and dust protection hazards when shotcrete is applied. Cement and other admixtures are caustic and may cause skin and respiratory irritation unless safety measures are takes in addition to required ventilation. Nozzlemen and helpers shall be equipped with gloves, eye protection, and adequate clothing during the application of shotcrete. The Contractor is responsible for meeting all Federal, State and Local Safety Code requirements.

636.15 Wall Drainage Network

General. The Contractor shall install and secure al elements of the wall drainage network scheduled to be incorporated into a lift as specified by the Soil Nail Wall Design, as specified herein, or as required by the Resident to suit the site conditions. Unanticipated subsurface drainage features exposed in the excavation cut face shall be captured independently of the drainage network and shall be mitigated prior to shotcrete application.

The drainage network shall consist of installing geocomposite drain strips, PVC connection pipes and wall footing drains as shown on the Plans or as directed by the Resident. Exclusive of the wall footing drains, all elements of the drainage network shall be installed prior to shotcreting.

Geocomposite Drain Strips. Geocomposite drain strips shall be installed as specified in the Soil Nail Wall Design. Drain strips at construction joints shall be placed such that the joint is aligned as close as practical along the middle of the longitudinal axis of the drain strip.

The geocomposite drain strips shall be at least 18 inches wide and shall be secured to the excavation face with the geotextile side against the ground after shotcreting. "U" shaped securing pins shall be at least 8 inches long with a 2.5 foot width and shall be installed 24 inches longitudinally along the length of the drain. Drain strips shall be made continuous by using the "shingle" method of splicing with a 16 inch minimum overlap such that the flow of water is not impeded.

The center-to-center spacing of the drain strips shall not exceed 5 ft.

Footing Drains. Footing drains shall consist of drainage aggregate and perforated PVC pipe and shall be constructed at the bottom of each wall as shown on the Layout Drawings.

Connection Pipes and Weepholes. Connection pipes and weepholes shall be installed as shown on the Layout Drawings, and as specified in the Soil Nail Wall Design. Connection pipes shall be lengths of solid PVC pipe installed to direct water from the geocomposite drain strips into the footing drain. Connection pipes and weep holes shall be connected to the drain strips by installing prefabricated drain grates as detailed on the Layout Drawings and specified in the Soil Nail Wall Design, and in accordance with the drain strip manufacturer's recommendations. The joint between the drain grate and the drain strip and the discharge end of the connector pipe shall be sealed to prevent shotcrete intrusion. Damage of the geocomposite drain strip which, in the opinion of the Resident, may cause interruption in flow shall require installation of additional connection pipes or weepholes above the damaged section. Connection pipes shall be extended to the edge of

the footing drain but not through the drainage geotextile. The integrity of the drainage geotextile shall not be interrupted.

636.16 Measurement and Payment

Measurement. The Unit of measurement for installation of the Soil Nail Wall will be per square foot and includes soil nail installation, placement of shotcrete, drainage elements, and the Cast-in-place facing.

No specific payment will be made for verification or proof nail testing, which shall be considered incidental to production nail installation. There will be a minimum of two (2) successful verification tests, and a minimum of 5 percent of the production nail successfully proof tested. Failed verification test nails or verification test nails installed to verify alternative nail installation methods proposed by the Contractor shall be considered incidental to production nail installation.

The final pay quantity shall be the design quantity increased by any authorized changes, as determined by the Resident.

Basis of Payment. The accepted Soil Nail Wall will be paid for at the contract unit prices. The payment shall be full compensation for all labor, equipment, earthwork, materials, material tests, field tests. Field tests and incidentals necessary to acceptability fabricate and construct the Soil Nail Wall, including installation of the soil nails, placement of shotcrete, drainage elements, and the Cast-in-place facing, in accordance with all requirements of the Contract.

Payment will be made under:

Pay Item		Measurement Unit
636.411	Soil Nail Wall	Square Foot

DRAFT- NOT OFFICIAL NOTICE OF INTENT TO COMPLY WITH THE MAINE STATE TRANSPORTATION SITE LAW GENERAL PERMIT FOR MAINE DEPARTMENT OF TRANSPORTATION DEVELOPMENTS

Notice of Intent (NOI) submission constitutes the expressed intent of the entity in Section A (of this form) and authorizes the development of the facility/site identified in Section B (of this form), under Maine's State Transportation Site Law General Permit. This also certifies that the responsible official understands and meets the eligibility conditions of the Transportation Site Law General Permit, agrees to comply with all applicable terms and conditions of the Transportation Site Law General Permit, and understands that continued authorization under the Transportation Site Law General Permit is contingent on maintaining eligibility for coverage. In order to be granted coverage the information on this form must be correct and up-to-date. Please send the completed form to the Maine Deptartment of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017. Please read the instructions on the back prior to completing the NOI form.

A. Company Information – Legal Name & Billing Address

Name of Applicant	MAINE DEPARTMENT OF TRANSPORTATION					
Mailing Address	16 STATE HOUSE STATION					
City/Town	AUGUSTA	State	ME	Zip Code:	04333	
Daytime Phone:	(207) 624-3100					

B. Facility/Site Physical Location

Facility/Site Name	YARMOUTH PARK AND RIDE				
Physical Address	ROUTE 1 YARMOUTH, ME at I-295 (EXIT 15)				
City/Town	YARMOUTH	State	ME	Zip Code:	
Daytime Phone:	(207) 624-3100				
Facility UTM NORTHING 4848679.19 (NAD 1983 UTM ZONE 19N)	Facility UTM EASTING: 404170.19				

C. Contact Person Information for this NOI

Name	LAURIE ROWE				
Title	TEAM LEADER				
Contact Address	MAINEDOT/ENVIRONMENTAL OFFICE 16 STATE HOUSE STATION				
City/Town	AUGUSTA	State	ME	Zip Code	04333
Email:	LAURIE.ROWE@MAINE.GOV				

D. Permit Information

Brief Description of Project: PARK AND RIDE LOT DEVELOPMENT IN CONJUNCTION WITH THE I-295 AND ROUTE 1 INTERCHANGE AT EXIT 15 IN YARMOUTH.

Amount of Developed Area: 3.05 (Total Acres)	Amount of Existing Developed Area: 1.67 (Acres) TO BE REMOVED, LOAM AND SEEDED	Amount of New Developed Area: 3.05 (Acres)
Natural Resource Protection Act Permit Required: Yes __X__ NO____ If Yes, Type of Permit: PBR ____ Tier 1 ____ Tier 2 ____ Ind __X__	Name of waterbody project site drains to: Royal River	Attachments to this NOI: [X] Site Location Map [X] Site Plans

E. Certification of Responsible Official

I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. By my signature as a responsible official for the entity or individual identified in Section A of this NOI, I certify under penalty of law that that I am the operator of the facility.

Printed Name: JUDY GATES

Title: DIRECTOR, ENVIRONMENTAL OFFICE | Date:

Signature:

Notice of Intent to Comply with Maine Construction General Permit: With this Site Law General Permit Notice of Intent and my signature above, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit. I have read and will comply with all of the MCGP standards.

OFFICE USE ONLY

OFFICE USE ONLY	Staff		Staff	Staff	
NOI #	Rec. Date		Acc. Date	Def. Date	

LICENSE REVIEW ROUTING SHEET

PROJECT MANAGER: William Bullard

ORDER TYPE:

X	ORIGINAL ORDER (N) (DRAFT)		CONDITION COMPLIANCE (C)		3PI
	MINOR REVISION (M)		TRANSFER (T)		SEND TO REGISTRY
	AMENDMENT (A)		AFTER-THE-FACT		CORRECTED ORDER

Copies of **NRPA's** that need to be sent to the **Registry** must have box checked above.

APPLICANT NAME:	Maine Department of Transportation		
APPLICANT ADDRESS:	c/o Laurie Rowe 16 State House Station Augusta, ME 04333	FAX#:	
E-MAIL ADDRESS: (License will be e-mailed to this address when decision is made)		Laurie.rowe@maine.gov	
PROJECT LOCATION: (town, county)	Yarmouth	PROJECT #	L-25825-2G-A-N
APPLICATION TYPE:(Use Site/NRPA or NRPA/SW)	NRPA	ATS#:	**75473**
ISSUES/COMMENTS:	Site Law permit to be issued separately under DOT General Permit process		
ACCEPTANCE DATE:	11/27/12		
AGENT NAME:			
AGENT ADDRESS:		FAX#	
E-MAIL ADDRESS: (License will be e-mailed to this address when decision is made)			

Final copies of Variance orders go automatically to the **Town & IFW.** List others to receive a copy here:

ABSTRACT (follow sample format below, then delete sample

- *Maine Department of Transportation (Yarmouth) (approval):* Department Order #L-25825-2G-A-N approved the application of the Maine Department of Transportation to fill 36,170 square feet of forested freshwater wetland and emergent freshwater wetland of special significance to construct a new 300-space park and ride facility on US Route 1 in the Town of Yarmouth. The project also includes new Northbound and Southbound interstate ramp configurations at the I-295 Exit 15 in Yarmouth. The applicant will compensate for the loss of function and values associated with the impacted wetlands by making an In Lieu Fee payment of $332,250 to the Maine Natural Resources Conservation Program. (*Bullard*)

ENFORCEMENT STAFF (if enforcement involved):	**Signature**	**OK Date:**
REGIONAL SUPER:	**Signature** James S. Bloogow	**OK Date:1/4/2013**
Ret'd to PROJ. MGR:	**Ret'd Date:**	**OK Date:**
LIC / COMPLIANCE Coordinator:		**OK Date:1/7/13**

	Signature	
DIVISION DIRECTOR SIGNOFF:	 **Signature**	**OK Date: 1.8.13**

STATE OF MAINE

Department of Environmental Protection

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

January 2013

Maine Department of Transportation
16 State House Station
Augusta, ME 04333
ATTN: Laurie Rowe

RE: Natural Resources Protection Act Application, Yarmouth, #L-25825-2G-A-N

Dear Ms. Rowe:

Please find enclosed a signed copy of your Department of Environmental Protection land use permit. You will note that the permit includes a description of your project, findings of fact that relate to the approval criteria the Department used in evaluating your project, and conditions that are based on those findings and the particulars of your project. Please take several moments to read your permit carefully, paying particular attention to the conditions of the approval. The Department reviews every application thoroughly and strives to formulate reasonable conditions of approval within the context of the Department's environmental laws. You will also find attached some materials that describe the Department's appeal procedures for your information.

If you have any questions about the permit or thoughts on how the Department processed this application please get in touch with me directly. I can be reached at (207) 615-3149 or at Bill.Bullard@maine.gov.

Sincerely,

Bill Bullard

Bill Bullard, Project Manager
Division of Land Resource Regulation
Bureau of Land and Water Quality

pc: File

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST

BANGOR
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PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
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WEB SITE: WWW.MAINE.GOV/DEP

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, ME 04333

DEPARTMENT ORDER

IN THE MATTER OF

MAINE DEPARTMENT OF TRANSPORTATION	) NATURAL RESOURCES PROTECTION ACT
Yarmouth, Cumberland County	) TIER 3 WETLAND ALTERATION
ROUTE I-295 EXIT 15 IMPROVEMENTS	)
AND PARK AND RIDE FACILITY	) WATER QUALITY CERTIFICATION
L-25825-2G-A-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act, the Department of Environmental Protection has considered the application of the MAINE DEPARTMENT OF TRANSPORTATION with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. Summary: The applicant proposes to fill 36,170 square feet of freshwater wetlands to support construction of a new northbound entry ramp and to improve the geometry and safety at all other ramps at the Exit 15 Route I-295 interchange in the Town of Yarmouth. Due to its current alignment and design, the southbound entry point to I-295 is classified as a High Crash Location at the ramp junction. Exit 15 is classified as a partial-service interchange because it does not provide northbound access to I-295. Vehicles must travel through Yarmouth on Route 1 to access the northbound lanes at Exit 17. The project is designed to reduce congestion through Yarmouth and at Exit 17 as well. Within the project limits, road shoulders along Route 1 will be increased to a minimum width of 4 feet to improve bicycle access.

The applicant also proposes to construct a 300-space park and ride lot on the westerly side of I-295, southwest of the Route 1 overpass. A park and ride lot at Exit 15 was identified as a priority by the Southern Maine Economic Development District and by the Regional Planning Council as part of a multi-modal corridor management plan.

B. Current Use of the Site: The site contains an existing interstate interchange. The park and ride lot will be constructed partially within the footprint of the existing I-295 southbound on-ramp from Route 1 and partially in undeveloped woodland adjacent to the St. Lawrence & Atlantic Railroad. The I-295 entrance ramps will be constructed or improved within adjacent wetlands or developed areas associated with the existing roadways.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

In accordance with Chapter 315, Assessing and Mitigating Impacts to Scenic and Aesthetic Uses, the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as

Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site.

The proposed project is not located on or near a scenic resource visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. The applicant has designed the project in accordance with applicable highway safety design standards and did not identify any specific visual design elements.

The Department did not identify any issues involving existing recreational and navigational uses.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the protected natural resource.

3. SOIL EROSION:

The applicant stated that the project will be performed in accordance with erosion control measures conforming with the latest versions of the *State of Maine Department of Transportation Standard Specifications for Highways and Bridges* and the *Department of Transportation's Best Management Practices for Erosion and Sediment Control*. These documents have been reviewed by the Department and found to contain acceptable measures for erosion and sedimentation control.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

According to the Department's Geographic Information System (GIS) database there are no mapped significant wildlife habitats located at the site.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that there are no Essential or Significant Wildlife Habitats mapped at the project site. However, wildlife habitat was identified as one of the functions and values of the impacted wetlands. The forested and emergent wetlands provide potential feeding, shelter and nesting habitat for a variety of avian and terrestrial wildlife. The project site was surveyed for vernal pools in 2004, 2009, 2010 and 2011. MDIFW staff reviewed one vernal pool evaluation form submitted by the applicant and determined that this pool did not meet the statutory criteria for a significant vernal pool as defined in 38 M.R.S.A. §480-B(10) because it showed evidence of being man-made. The applicant stated that this vernal pool and associated critical terrestrial habitat provide breeding, forage and shelter opportunities for obligate species. The proposed In Lieu Fee compensation payment discussed in Finding 6 was calculated to compensate for lost wildlife habitat values associated with the impacted wetlands, and in part to compensate for vernal pool habitat impacts regulated only by federal agencies.

The Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life,

provided the In Lieu Fee contribution is submitted by the applicant prior to the start of construction.

5. WATER QUALITY CONSIDERATIONS:

No waterways are present on the site and since the applicant proposes to install proper erosion controls as noted in Finding 3, the project is not anticipated to have an unreasonable impact on waters of the State.

The Department does not anticipate that the proposed project will violate any state water quality law, including those governing the classification of the State's waters.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The applicant proposes to alter 36,170 square feet of forested and emergent freshwater wetland to construct the project. Primary functions of the impacted forested and emergent wetlands are groundwater recharge and discharge and, as described in Finding 4, feeding, nesting and habitat for a variety of wildlife species.

The Department's Wetlands and Waterbodies Protection Rules, Chapter 310, require that the applicant meet the following standards:

A. Avoidance. No activity may be permitted if there is a practicable alternative to the project that would be less damaging to the environment. Each application for a Tier 3 wetland alteration permit must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist. The applicant submitted an alternatives analysis for the proposed project as Section 5 of the application. The analysis examined three project components, 1-295 southbound on-ramp improvements; a new northbound ramp; and the park and ride lot. The No Build alternative was discarded as unacceptable for the southbound off-ramp because the existing conditions at the ramp create long off-loading queues with a safety hazard resulting from stopped vehicles waiting to exit the highway. Another safety issue exists at the southbound on-ramp as traffic currently merges along a curve with limited sight distance, creating a high accident location.

The I-295 Corridor Study, completed in 2010 by the applicant in conjunction with the Portland Area Comprehensive Transportation System, evaluated the long term needs of the I-295 Corridor between Scarborough and Brunswick in order to identify a set of recommendations to provide safe and efficient transportation service through the year 2025. Environmental impacts of various traffic routing options were considered in the study. At Exit 15, consideration was given to three different full-service interchange alternatives: a Modified Diamond, a Diamond Signalized, and a Diamond Roundabout. The selected option, a Modified Diamond, was deemed to provide the best balance of cost, current and long-term traffic control and environmental impact.

B. Minimal Alteration. The amount of wetland to be altered must be kept to the minimum amount necessary for meeting the overall purpose of the project. The applicant minimized the wetland alteration required by the project in several ways. The southbound reconfiguration was located to the extent possible within the existing southbound on-/off-ramp footprint. Some of the new northbound on-ramp was located within the footprint of the existing southbound off-ramp. The footprint of the park and ride lot was reduced by changing the capacity from 500 to 300 cars

and by reducing the circulation radius of travel lanes to accommodate low speed traffic only and by using painted traffic islands rather than larger raised islands. The profiles of the southbound on-ramp and the park and ride were aligned with existing terrain as much as possible to minimize earthworks and wetland impacts of those project components.

C. Compensation. In accordance with Chapter 310 Section 5(C)(1), compensation is required to achieve the goal of no net loss of coastal wetland functions and values since the project will result in over 15,000 square feet of fill in the resource, which is the threshold over which compensation is generally required.

The applicant proposes to provide compensation for the project's direct and indirect wetland impacts by making a contribution into the In Lieu Fee program of the Maine Natural Resource Conservation Fund (MNRCF) in the amount of $332,250.30. The contribution was selected through agency discussions between the Department, US Army Corps of Engineers, and the Maine Department of Transportation Field Services and Mitigation Division. The applicant proposes to submit the compensation fee payment to the MNRCF prior to the start of construction.

The Department finds that the applicant has avoided and minimized wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project provided the In Lieu Fee contribution is submitted by the applicant to the MNRCF prior to the start of construction.

7. OTHER CONSIDERATIONS:

The Department did not identify any other issues involving existing scenic, aesthetic, or navigational uses, soil erosion, habitat or fisheries, the natural transfer of soil, natural flow of water, water quality, or flooding.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act:

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.

B. The proposed activity will not cause unreasonable erosion of soil or sediment.

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided that prior to construction the applicant makes a contribution to the In Lieu Fee program as described in Finding 6.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in Title 38 M.R.S.A. Section 480-P.

THEREFORE, the Department APPROVES the above noted application of the MAINE DEPARTMENT OF TRANSPORTATION to fill wetlands to support construction of highway improvements in the Town of Yarmouth as described above, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

2. The applicant shall take all necessary measures to ensure that its activities or those of its agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.

3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

5. Prior to the start of construction, the applicant shall submit a payment in the amount of $332,250.30, payable to the Treasurer, State of Maine, to the attention of the ILF Program Administrator, Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine 04333.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS _____ DAY OF _____, 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____
Patricia W. Aho, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES…

WB/L25825AN/ATS#75473

Natural Resource Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCE PROTECTION ACT, TITLE 38, M.R.S.A. SECTION 480-A ET.SEQ. UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

Revised (12/2011/DEP LW0428)

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status*. The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

STATE OF MAINE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SITE LOCATION OF DEVELOPMENT

General Permit for the
Maine Department of Transportation

I. General Permit Coverage

A. Basis: DEP recognizes that MaineDOT has established environmental procedures and standard practices that meet or exceed the requirements of Site Law. MaineDOT conducts environmental reviews using professional staff to ensure compliance with State and Federal environmental requirements and various initiatives including, but not limited to, the National Environmental Policy Act, Federal and State wetland permitting requirements, the Maine Department of Transportation's Best Management Practices for Erosion and Sediment Control (BMP's), the MaineDOT Waterway and Wildlife Crossing Policy and Design Guide, and the Memorandum of Agreement for Stormwater Management. MaineDOT licensed engineering staff design projects in accordance with applicable standards including, but not limited to, the State of Maine Department of Transportation Standard Specifications for Highways and Bridges, and the American Association of State Highway and Transportation Officials (AASHTO) Design Standards. MaineDOT has a licensed geologist, soil scientist, land surveyors, landscape architects, air and noise specialist and legal staff. MaineDOT procedures and policies (as amended from time to time) relevant to meeting Site Law standards are listed below under sections specific to the standards.

B. Purpose: This General Permit for Maine Department of Transportation (MaineDOT), hereinafter described as the State Transportation General Permit for Site Location of Development projects (GP), authorizes the MaineDOT to construct or cause to be constructed or operate or cause to be operated all developments under MaineDOT's authority for which approval is required pursuant to the Site Location of Development Act, 38 M.R.S. § 481-490 (Site Law).

C. Authorization: This General permit is authorized by 38 M.R.S. § 486-B. This permit does not affect requirements under other applicable Maine statutes such as the Natural Resources Protection Act, 38 M.R.S. § 480-A through 480-HH (NRPA).

D. Effective period: This GP is effective_____, 2013, and authorized through, _____, 2018. The Maine Department of Environmental Protection (DEP) intends subsequent re-issuance of this General Permit. Performance and compliance under this GP will be assessed on an annual basis by MaineDOT and DEP.

II. Standards

A development authorized by this GP is required to meet all applicable requirements of the Site Law and the specific conditions listed in this section pursuant to 38 M.R.S § 484.

A. Financial Capacity (38 M.R.S § 484-1): MaineDOT shall have the financial capacity and technical ability to develop a project in a manner consistent with state environmental standards and consistent with the Site Law. Funding commitments are authorized through an approved Statewide Transportation Improvement Program (STIP), MaineDOT Biennial Capital Work Plans and the National Environmental Policy Act (NEPA).

Link to MaineDOT Projects:
http://www.maine.gov/mdot/planningdocs/index.htm

B. No Adverse Effect on the Natural Environment (38 M.R.S § 484-3): MaineDOT shall not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality.

1. MaineDOT's Environmental Office will screen all projects for potential impacts to wetlands, vernal pools, streams, significant wildlife habitats, rare, threatened, and endangered species and unusual natural areas; coordinate with state and federal natural resource agencies; and incorporate agency recommendations as appropriate and practicable to minimize impacts to affected resources. When state and federal natural resource agencies and MaineDOT cannot agree on recommendations to minimize impacts, MaineDOT shall abide by DEP's requirements.

2. MaineDOT will file Natural Resource Protection Act (NRPA) applications with Maine DEP or document exempt activities.

3. MaineDOT will file applications with the Army Corps of Engineers in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act

4. MaineDOT will design and construct all stream crossings in accordance with the *MaineDOT Waterway and Wildlife Crossing Policy and Design Guide for Aquatic Organism, Wildlife Habitat and Hydrologic Connectivity*. This document was developed by MaineDOT in cooperation with state and federal agencies; including DEP, Maine Department of Marine Resources (DMR), Maine Inland Fish &Wildlife (IF&W), National Marine Fisheries Service (NMFS), Army Corps of Engineers (ACOE), United States Fish and Wildlife Service (USFWS), and Environmental Protection Agency (EPA).

Link to 2008 Waterway and Wildlife Crossing Policy and Design Guide: http://www.maine.gov/mdot/env/documents/3rd%20edition%20-%20merged%20final%20version%207-01-08.doc

5. MaineDOT will review projects for impacts to historic and cultural resources in accordance with a Programmatic Agreement between Federal

Highway Administration (FHWA), Federal Transit Administration (FTA), Advisory Council on Historic Preservation (ACHP), Maine State Historic Preservation Officer (SHPO), and MaineDOT. This process will be utilized on all projects that trigger the Site Law.

Link to Section 106 Programmatic Agreement:
http://www.maine.gov/mdot/env/documents/pdf/Section106ProgrammaticAgreement.pdf

6. MaineDOT will complete air quality analysis at the Program (STIP) and Plan (Long Range Plan) levels. These analyses are a sum total of all the projects in the Plan or Program. For National Environmental Policy Act (NEPA) purposes, if a project is in a STIP that has undergone an air quality analysis, the project "will not significantly affect the ambient air quality".

Link to MaineDOT Statewide Transportation Improvement Program:
http://www.maine.gov/mdot/stip/index.htm

7. MaineDOT has adopted a statewide noise policy that has been approved by the Federal Highway Administration and serves to guide decision-makers on all noise related matters associated with transportation. In addition, all projects will meet the noise standards of 06-096 CMR 375 §10 Control of noise as applicable.

Link to MaineDOT Noise Policy:
http://www.maine.gov/mdot/aqn/index.htm

8. MaineDOT will hold public meetings on all proposed projects to allow public input. These meetings are an opportunity for the public to identify issues of local interest including areas with unique or scenic character.

MaineDOT professional landscape architects will review site plans and design landscape plans as appropriate for the type of project, its surrounding area, and any identified scenic resource.

The MaineDOT must consider a proposed project's potential for significant impacts to community cohesiveness, land use patterns, scenic character under the National Environmental Policy Act.

MaineDOT must also review projects pursuant to Section 4(f) of the Department of Transportation Act (49 U.S.C. 303, 1966). This law protects public recreational properties and historic properties from impacts and uses from transportation projects. MaineDOT identifies all publicly owned land of public parks, recreation areas, public wildlife and

waterfowl refuges, and land of significant historic properties associated with a transportation project and avoid and under this federal law must minimize impacts to these categories of resources.

C. Soil Types (38 M.R.S § 484-4): MaineDOT developments shall be built on soil types that are suitable to the nature of the undertaking. MaineDOT employs geotechnical engineers that are part of the design team for all projects to evaluate the suitability of existing soils and determine the need for engineering practices to address soil limitations.

MaineDOT employs licensed site evaluators that design replacement or new systems in accordance with the Maine State Plumbing Code and the Maine Subsurface Wastewater Disposal Rules. These systems are reviewed and permitted by the Maine Department of Health and Human Services and/or the applicable municipality.

D. Storm Water Management and Erosion Control (38 M.R.S § 484-4-A): MaineDOT shall construct and operate the development project in accordance with the most recent *Memorandum of Agreement for Stormwater Management between the Maine Department of Transportation, Maine Turnpike Authority, Maine Department of Transportation and the Maine Department of Environmental Protection* and The *Maine Department of Transportation's Best Management Practices for Erosion and Sediment Control (BMP's).* MaineDOT shall require an Erosion Control Plan (developed by the contactor and approved by MaineDOT) for all projects under this General Permit. All projects meeting this General Permit shall comply with the Basic Standards of the DEP Stormwater rules.

Link to MaineDOT's Best Management Practices for Erosion and Sediment Control:
http://www.maine.gov/mdot/env/documents/pdf/bmp2008/BMP2008full.pdf

Link to MaineDOT/DEP's MOA on Stormwater:
http://wwwmdot/env/hydro.htm

E. Groundwater (38 M.R.S § 484-5): MaineDOT shall construct and operate the development project in a manner that will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur. MaineDOT Groundwater and Hazardous Waste (GWGH) Division will develop viable and sustainable water extraction practices for both potable and production systems. The GWHW assists MaineDOT in the development of sound management practices for the storage of hazardous materials. These actions are directed toward minimizing impacts to waters recharging the groundwater regime. In event of a release of hazard materials,

contingencies must be in place to undertake prompt response actions to minimize environmental harm.

MaineDOT's Maintenance facilities shall comply with relevant sections of DEP's Spill Prevention, Control and Countermeasures (SPCC) Plan requirements as applicable. Facilities that exceed regulatory petroleum storage thresholds have site specific plans and perform required training and inspections. This initiative focusing on the proper management and response to releases and discharges is further supported by MaineDOT's internal policy related to spill prevention and response. MaineDOT's Spill Prevention and Response Policy applies to all operations where the potential exists for the accidental release or discharge of hazardous materials.

F.Infrastructure (38 M.R.S § 484-6): MaineDOT developments shall make adequate provisions for utilities, including water supplies, sewerage facilities and solid waste disposal required for the development, and developments shall not have an adverse effect on the existing or proposed utilities in the municipality or area served by those services.

In locations where a subsurface wastewater disposal facility may be constructed, it must be designed, installed and operated in accordance with relevant sections of Maine DHHS's subsurface disposal system regulations to ensure effluent emanating from the systems are readily attenuated thereby minimizing groundwater quality concerns.

The MaineDOT Utility Coordination Unit will identify all utilities within a project area and will be responsible for coordinating with municipal and private utilities to ensure no unreasonable burden on, disruption of, or interference with, service.

Link to Utility Coordination:
http://www.maine.gov/mdot/utilities/projects.htm

MaineDOT's GWHW Division Unit will review projects to ensure that all solid, special, universal, and hazardous wastes associated with transportation projects is managed in accordance with State and Federal Requirements.

G. Flooding (38 M.R.S § 484-7): MaineDOT developments shall not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure.

MaineDOT's Hydrology Division provides drainage and hydrology expertise to MaineDOT programs and evaluates impacts of development to flood zones and adjacent properties. MaineDOT shall be consistent with the standards of the National Flood Insurance Program through adherence to Presidential Executive Order 11988.

H. Blasting (38 M.R.S § 484-9): MaineDOT developments shall conduct blasting in accordance with the standards in 38 M.R.S. § 490-Z (14). MaineDOT Standard Specifications for contractors (Section 105.2.6) provides internal guidelines for blasting. These standards specifications incorporate by reference the International Society of Explosives Engineers (ISEE) Blasters' Handbook and the Bureau of Mines Report (#8485).

Link to MaineDOT Standard Specifications for Blasting:
http://www.maine.gov/mdot/contractor-consultant-information/ss_division_100.pdf

I. Public Involvement: MaineDOT will follow a Public Involvement Plan that outlines three types of public involvement (Public information, Public participation, and Public consultation and collaboration) depending on the scope of the project and anticipated level of public interest. A public involvement plan typically involves a public notice, a preliminary public meeting and a final public meeting. Project details must be presented at the public meeting. MaineDOT will notify the public in accordance with 06-096 CMR 2 rules Concerning the Processing of Applications and Other Administrative Matters for all projects performed under this GP.

Link to MaineDOT Public Involvement Plan:
http://www.maine.gov/mdot/pip/documents/PIPv3%20march042010.doc

III. Submittals

A. Notice of Intent Form: The NOI form shall be completely filled out and signed by the Director, Environmental Office, MaineDOT

B. Location Map: A map showing the location and extent of the project shall be submitted. A U.S.G.S. topographic map or Maine Atlas and Gazetteer map are acceptable for this purpose.

C. Plans: MaineDOT shall submit site plans of the proposed development with the NOI. Plans shall include existing and proposed structures, permanent erosion and sedimentation measures, clearing limits, and impervious areas.

IV. Conditions of Approval:

The DEP may apply reasonable conditions to the approval of the NOI to ensure compliance with standards under the Site Law in addition to the following conditions.

A. Retention of Records: MaineDOT shall retain copies of all reports, certifications and approvals required by this GP, and records of all data used to complete the NOI to be covered by this GP, for a period of at least three (3) years from the date the NOI is filed. The DEP may extend the time of record retention at any time.

B. Accessibility: MaineDOT shall make a copy of the NOI and all data available to the public.

C. Inspection and Entry: Employees and Agents of the DEP may enter any property at reasonable hours in order to determine compliance.

D. Approval of Variations from Plans. The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation. Further subdivision of proposed lots by the applicant or future owners is specifically prohibited without prior approval of the Board, and the applicant shall include deed restrictions to that effect.

E. Transfer of Development: In the event that the ownership of a facility is transferred to a new owner, the MaineDOT shall notify the DEP of a change in ownership. Subsequent development by other parties is not covered under this transportation GP.

F.Time frame for approvals. If the construction or operation of the activity is not begun within four years, this approval shall lapse and the applicant shall reapply to the DEP for a new approval. The applicant may not begin construction or operation of the development until a new approval is granted. A reapplication for approval may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

V. Review

The DEP shall approve a proposed MaineDOT development upon receipt and review of a completed NOI, acceptable for processing, determined to be in compliance with the standards of this GP.

VI. Procedure

A. Notice of Intent: A NOI must be submitted by MaineDOT for a proposed development with submittals as described in Section III above. By submitting the NOI MaineDOT agrees to comply with the terms and conditions of this GP.

B. NOI Submission: MaineDOT shall file the NOI on DEP form DEPLW--. The NOI shall contain all information required in this GP and the NOI form.

C. Deficient NOI: If any portion of the NOI does not meet one or more of the minimum requirements, or if the DEP requests additional information to ensure compliance with standards of the Site Law, the applicant will be notified of the deficiency within fourteen (14) calendar days. It is the responsibility of the MaineDOT to make all required changes and resubmit the NOI. A new review period will begin when the revised NOI is received by the DEP.

D. Processing the NOI: Prior to the authorization of a development pursuant to this GP, an NOI must be reviewed and approved by the DEP within thirty (30) calendar days of receipt unless the DEP approves or denies the NOI prior to that date. If MaineDOT does not receive correspondence from the DEP within the thirty (30) calendar day period after NOI submission, then MaineDOT is authorized to carry out the activity. If a full NRPA permit is required for any portion of the development, the NOI and the NRPA application shall be submitted together. For such cases, the NOI review period will run concurrently with the full NRPA permit review period and the length of the NOI review period will be the same as the review period for the NRPA permit application.

E. Where to Submit: A completed and signed NOI shall be submitted to:

Director
Division of Land Resource Regulation
Bureau of Land and Water Quality
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017

VII. Approval

A MaineDOT development is considered to be authorized under this GP upon approval of a NOI in accordance with section VI of this General Permit.

VIII. Fee

The DEP shall not charge a fee for processing and approval of a NOI under this GP and in accordance with M.R.S.A. 38 § 486-B (6).

IX. Modification of General Permit and NOI

The DEP may modify this GP and/or the NOI at any time through notification of the MaineDOT.

X. Right to Appeal:

All final license or permit decisions made by the Commissioner may be appealed to the Board of Environmental Protection pursuant to M.R.S.A. 38 § 341-D (4).

LEGEND

- PROPOSED WAVETRONIX SMARTSENSOR "ADVANCE" ON WOOD POLE WITH BRACKET ARM
- EXISTING POWER POLE
- TEMPORARY SIGNAL POLE W/ GUY
- CONTROLLER CABINET
- NEW SIGNAL HEADS
- NON-METALLIC CONDUIT
- TEMPORARY AERIAL POWER
- DETECTION ZONE
- 24" STOP BAR
- WOOD POLE WITH WAVETRONIX SMARTSENSOR "MATRIX" UNITS FOR STOP
- 24"X36" YIELD MARKINGS

PLAN

25 0 25 50

Scale of Feet

(A) CMP 28 (POWER SOURCE)
ADD GUY ANCHOR. INSTALL AERIAL POWER "A" TO "C".

(B) TEMP. SIGNAL POLE. AERIAL CONDUCTORS "C" TO "B".
INSTALL 35' CLASS 4 WOOD POLE, WITH GUY ANCHOR AND RISERS, 10' SOUTHWEST OF LIGHT POLE, 5' BEHIND CURB.
ATTACH SIDE-MOUNTED VERTICAL 3-SECTION SUPPLEMENTAL VEHICULAR HEAD ASSEMBLY WITH 10' VERTICAL CLEARANCE.
INSTALL WAVETRONIX SMARTSENSOR "MATRIX" FOR STOP DETECTION FOR EXIT RAMP LT/TH LANE. MOUNT ON 6' BRACKET ARM. INSTALL WORK ZONE CRASH CUSHIONS ON APPROACH SIDE OF POLE.

(C) TEMP. SIGNAL POLE.
INSTALL 35' CLASS 4 WOOD POLE, WITH GUY ANCHOR, 10' SOUTHWEST OF CB ALONG ROUTE 1, 20' FROM TRAVELWAY.
INSTALL SERVICE METER AND POLE-MOUNTED CONTROLLER.
INSTALL WAVETRONIX SMARTSENSOR "MATRIX" FOR STOP DETECTION FOR ROUTE 1 EASTBOUND LEFT TURN AND THROUGH LANES.

(D) TEMP. SIGNAL POLE. AERIAL CONDUCTORS "C" TO "D".
INSTALL 35' CLASS 4 WOOD POLE, WITH GUY ANCHOR, 10' SOUTHWEST OF LIGHT POLE ALONG ROUTE 1, 20' FROM TRAVELWAY.

(E) TEMP. SIGNAL POLE. AERIAL CONDUCTORS FROM "D" TO "E".
INSTALL 35' CLASS 4 WOOD POLE, WITH GUY ANCHOR, 20' SOUTHWEST OF CMP 28 ALONG ROUTE 1, 8' BEHIND CURB.
INSTALL WAVETRONIX SMARTSENSOR "MATRIX" FOR STOP DETECTION FOR ROUTE 1 WESTBOUND.

(F) TEMP. RISER POLE. CONDUIT FROM POLE "B".
INSTALL 25' CLASS 4 WOOD POLE WITH POLE RISER BEHIND DITCH APPROXIMATELY 1,000' FROM RAMP STOP BAR.
INSTALL WAVETRONIX SMARTSENSOR "MATRIX" FOR QUEUE DETECTION.

(G) TEMP. RISER POLE. CONDUIT FROM POLE "B".
INSTALL 25' CLASS 4 WOOD POLE WITH POLE RISER 5' BEHIND CURB APPROXIMATELY 200' FROM POLE "B".
INSTALL WAVETRONIX SMARTSENSOR "ADVANCE" ON 8' BRACKET ARM.
INSTALL WORK ZONE CRASH CUSHIONS ON APPROACH SIDE OF POLE.
VERIFY BURIED TELEPHONE CABLE LOCATION BEFORE SETTING POLE.
INSTALL W3-3 SIGN ON POLE.

(H) TEMP. RISER POLE. CONDUIT FROM POLE "D".
INSTALL 25' CLASS 4 WOOD POLE WITH POLE RISER 5' BEHIND CURB APPROXIMATELY 200' FROM POLE "D".
INSTALL WAVETRONIX SMARTSENSOR "ADVANCE" ON 8' BRACKET ARM.
INSTALL WORK ZONE CRASH CUSHIONS ON APPROACH SIDE OF POLE.
INSTALL W3-3 SIGN ON POLE.

OTHER SIGNING NOTES

INSTALL W23-2 SIGNS EASTBOUND AND WESTBOUND ON ROUTE 1 APPROXIMATELY 1,000' BEFORE STOP BARS.

INSTALL W3-4 SIGNS EASTBOUND AND WESTBOUND ON ROUTE 1 APPROXIMATELY 750' BEFORE STOP BARS.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

IM-1108(600)X

WIN 11086.00

HIGHWAY PLANS

PROJ. MANAGER	ERNIE MARTIN	BY	DATE
DESIGN-DETAILED	ALG	ALG	1-13
CHECKED-REVIEWED	ALG	ALG	1-13
DESIGN2-DETAILED2		JLE	
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
4226
P.E. NUMBER
JANUARY 9, 2013
DATE

YARMOUTH
I-295 EXIT 17

TEMPORARY SIGNAL PLAN

SHEET NUMBER
1
OF 4

Filename: ...\001_temp_signal_plan WHITE.dgn Division: HIGHWAY Username: jeason Date:1/10/2013

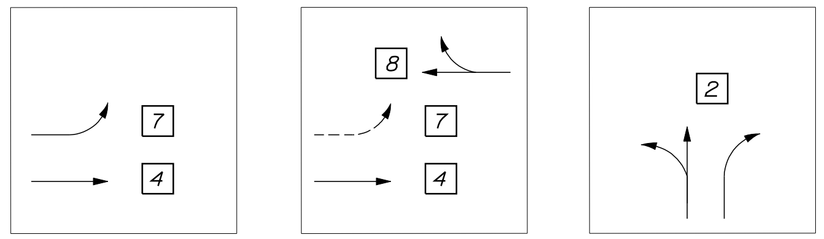
TEMPORARY SIGNAL NOTES

1. ALL WORK SHALL BE COMPLETED IN CONFORMANCE WITH THE LATEST REVISIONS OF THE STATE OF MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. ALL SIGNAL HEADS AND OVERHEAD SIGNAGE SHALL BE STABILIZED WITH A BOTTOM TETHER.
3. MINIMUM CLEARANCE TO THE BOTTOM OF SIGNAL HEADS SHALL BE 16'. MINIMUM CLEARANCE TO THE BOTTOM OF OVERHEAD SIGNS SHALL BE 17'.
4. ROUTE 1 SIGNAL FACES SHALL HAVE 5" RETROREFLECTIVE LOUVERED BACKPLATES.
5. RADAR DETECTION TO BE INSTALLED FOR THE ROUTE 1 APPROACHES TO THE TEMPORARY SIGNAL AT THE EXIT 17 NORTHBOUND EXIT RAMP SHALL BE CONTINUOUS VEHICLE TRACKING ADVANCE RADAR WITH SAFE ARRIVAL TECHNOLOGY, WAVETRONIX SMARTSENSOR "ADVANCE" MODEL 200, OR APPROVED EQUAL. SYSTEM SHALL DELAY THE START OF YELLOW AND/OR EXTEND RED BASED ON VEHICLE CALCULATED SPEED AND ARRIVAL TIME. RADAR DETECTION FOR PRESENCE AT STOP BARS AND FOR RAMP QUEUE DETECTION SHALL BE WAVETRONIX SMARTSENSOR "MATRIX", OR APPROVED EQUAL.
6. THE CONTRACTOR SHALL INSTALL A SELF-CONTAINED METER SOCKET BYPASS (SINGLE PHASE 100 OR 150 AMP) WITH A SINGLE HANDLE LEVER-OPERATED BYPASS FOR POWER SHUTOFF TO THE METER WITHOUT INTERRUPTING THE SIGNAL DISPLAYS. A NEMA 3R METER DISCONNECT ENCLOSURE SHALL BE INSTALLED EXTERNAL TO THE CONTROLLER CABINET BETWEEN THE METER AND THE CABINET.
7. THE CONTROLLER SHALL BE NEMA TS-2 TYPE INSTALLED IN A NEMA TS-2 POLE-MOUNTED CABINET.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE PRESENCE OF UNDERGROUND UTILITY FACILITIES PRIOR TO COMMENCING ANY EXCAVATION WORK OR INSTALLATION OF POLES, ANCHORS, OR GROUND-MOUNTED SIGNAGE AND SHALL NOTIFY UTILITIES OF PROPOSED WORK IN ACCORDANCE WITH MRSA TITLE 23 SECTION 3360-A, MAINE "DIG SAFE" SYSTEM.
9. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITIES TO ASSURE THAT REQUIRED CLEARANCES ARE MET.
10. EXISTING CONFLICTING MARKINGS SHALL BE REMOVED AND CONFLICTING SIGNAGE COVERED DURING OPERATION OF THE TEMPORARY TRAFFIC SIGNAL, AS DIRECTED BY THE RESIDENT.
11. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST 48 HOURS BEFORE ANY OPERATIONS ARE CONDUCTED THAT POTENTIALLY COULD CONFLICT WITH AERIAL UTILITIES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC MAINTENANCE PLAN FOR USE DURING INSTALLATION OF THE TEMPORARY TRAFFIC SIGNAL IN ACCORDANCE WITH MAINEDOT REQUIREMENTS AND THE LATEST EDITION OF THE MUTCD.
13. ALL TEMPORARY WARNING SIGNAGE SHALL HAVE ORANGE BACKGROUND.
14. MAINTENANCE OF THE TEMPORARY TRAFFIC SIGNAL AND ASSOCIATED SIGNING AND MARKINGS SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR UNTIL PROJECT ACCEPTANCE BY MAINEDOT.
15. PAYMENT UNDER PAY ITEM 643.72 FOR THE TEMPORARY TRAFFIC SIGNAL SHALL INCLUDE, BUT IS NOT LIMITED TO, WOOD POLES, GUY LEADS AND ANCHORS, AERIAL SERVICE AND METER, POLE RISERS, BRACKET ARMS, CONTROLLER, CABINET, CONTINUOUS TRACKING ADVANCE RADAR DETECTION SYSTEM FOR ROUTE 1 APPROACHES, PRESENCE DETECTION AT STOP BARS AND FOR QUEUE DETECTION, AND ALL APPURTENANCES AND INCIDENTALS NECESSARY FOR A COMPLETE FUNCTIONING TEMPORARY TRAFFIC SIGNAL INSTALLATION. PAVEMENT MARKINGS AND SIGNAGE INSTALLED AND REMOVED IN CONJUNCTION WITH THE TEMPORARY SIGNALIZATION WILL BE PAID UNDER THE APPLICABLE PAY ITEMS OF SECTION 627 AND SECTION 645.

GENERAL NOTES

1. ANY CLEARING OR TRIMMING WITHIN THE RIGHT OF WAY THAT IS CONSIDERED BY THE RESIDENT TO BE NECESSARY TO PROVIDE UNOBSTRUCTED RADAR DETECTION OR FOR INSTALLATION OF TEMPORARY POLES AND ANCHORING SHALL BE PERFORMED INCIDENTAL TO PAYMENT FOR THE TEMPORARY TRAFFIC SIGNAL.
2. ANY DAMAGE TO SLOPES CAUSED BY THE CONTRACTOR'S EQUIPMENT, PERSONNEL, OR OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE RESIDENT, WITH NO ADDITIONAL PAYMENT.
3. TEMPORARY POLES, ANCHORS, ELECTRICAL SERVICE, TRAFFIC SIGNAL AND DETECTION HARDWARE, AND TEMPORARY SIGNAGE AND PAVEMENT MARKINGS INSTALLED FOR THE TEMPORARY SIGNALIZATION SHALL BE REMOVED BY THE CONTRACTOR UPON NOTICE FROM THE RESIDENT THAT THE TEMPORARY TRAFFIC SIGNAL IS NO LONGER REQUIRED. ALL EQUIPMENT AND SIGNAGE REMOVED SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. HOLES CREATED BY REMOVALS WILL BE FILLED AND COMPACTED WITH APPROVED MATERIALS AS DIRECTED BY THE RESIDENT. SOIL REMOVED FOR INSTALLATION OF WOOD POLES SHALL BE DISPOSED OF AT LOCATIONS APPROVED FOR DISPOSAL OF SUCH MATERIAL. DISTURBED AREAS SHALL BE SEEDED WITH SEEDING METHOD NO. 2 AND MULCHED. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
4. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE MAINE DEPARTMENT OF TRANSPORTATION'S BEST MANAGEMENT PRACTICES FOR EROSION CONTROL & SEDIMENT CONTROL, FEBRUARY, 2008. PAYMENT FOR TEMPORARY EROSION CONTROL MEASURES WILL BE INCIDENTAL TO THE CONTRACT.

PHASING SEQUENCE



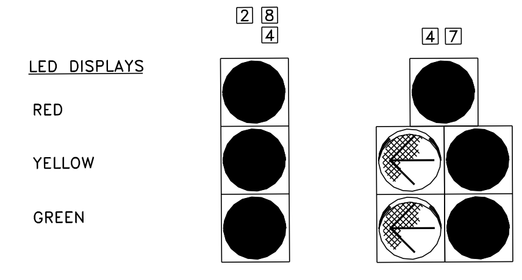
ROUTE 1 EB | ROUTE 1 EB & WB | NB EXIT RAMP

INITIAL SIGNAL TIMING

PHASE	1	2	3	4	5	6	7	8
MIN INITIAL	-	4.0	-	4.0	-	-	4.0	4.0
VEH EXT	-	3.0	-	3.0	-	-	3.0	3.0
MAX. GREEN 1	-	35.0	-	44.0	-	-	12.0	26.0
YELLOW	-	3.6	-	3.9	-	-	3.9	3.9
ALL RED	-	1.8	-	2.5	-	-	2.5	2.5
FLASH	-	R	-	Y	-	-	Y	Y
RECALL	-	-	-	SOFT	-	-	-	SOFT

NB EXIT RAMP INDICATIONS SHALL REST ON RED.

SIGNAL HEAD DETAIL

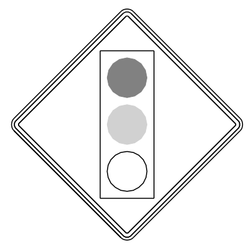


NO.REQUIRED 6 1

ALL SIGNAL FACE DISPLAYS SHALL BE 12" LED
ALL SIGNAL FACE DISPLAYS SHALL HAVE TUNNEL VISORS

SIGN DETAILS

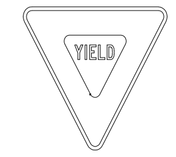
R3-5L
1 REQUIRED (OVERHEAD)
30"X36"



W3-3
2 REQUIRED (GROUND)
36"X36"

W3-4
2 REQUIRED (GROUND)
36"X36"

W23-2
2 REQUIRED (GROUND)
36"X36"



R1-2
1 REQUIRED (GROUND)
36"X36"X36"

R10-12
1 REQUIRED (OVERHEAD)
30"X36"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

IM-1108(600)X

WIN
11086.00

HIGHWAY PLANS

	BY	DATE
PROJ. MANAGER	ERNIE MARTIN	
DESIGN-DETAILED	ALG	1-13
CHECKED-REVIEWED	ALG	1-13
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

4226
P.E. NUMBER

January 9, 2013
DATE

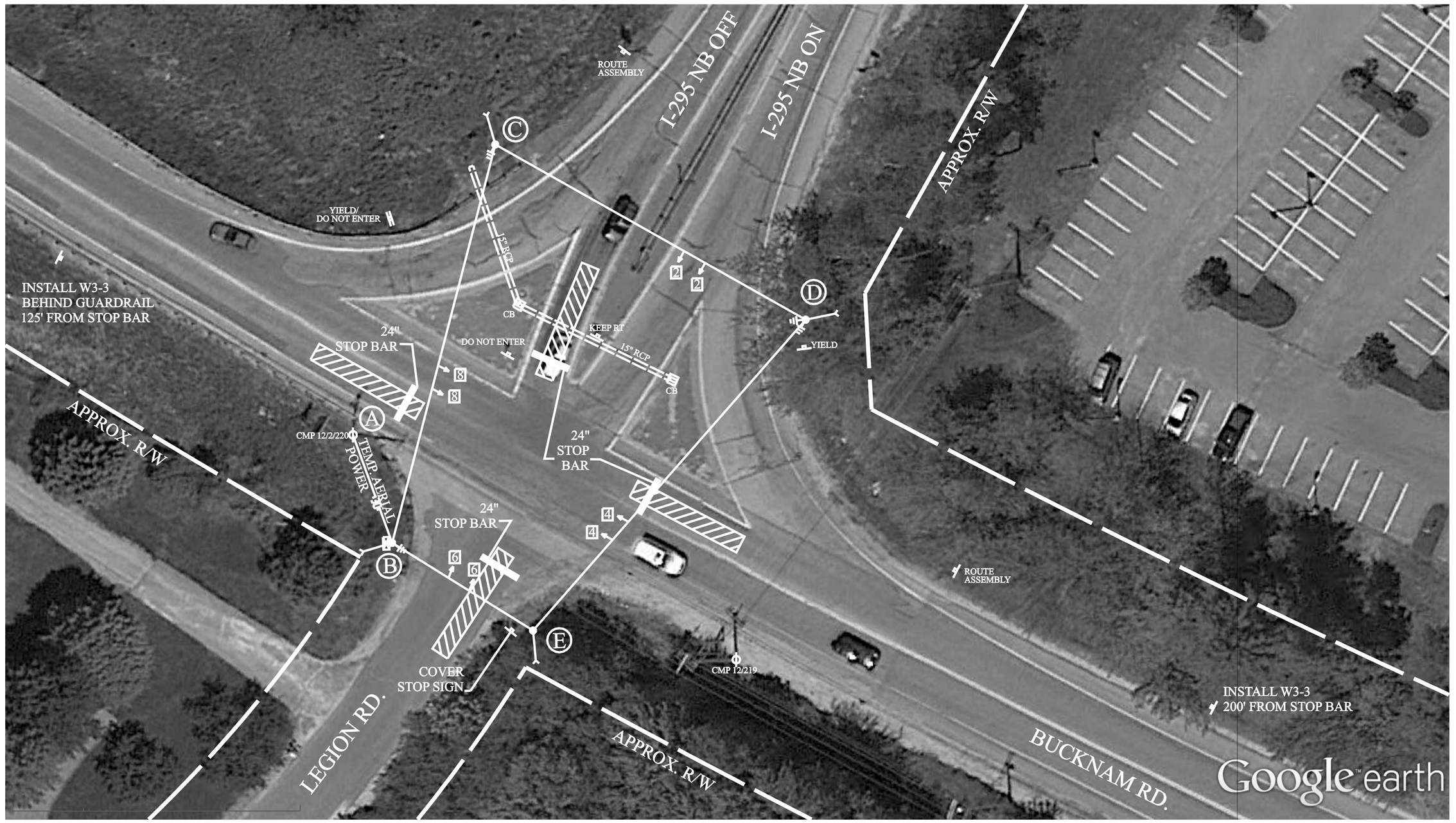
YARMOUTH
I-295 EXIT 17 NB

TEMPORARY SIGNAL DETAILS

SHEET NUMBER

2

OF 4



LEGEND

- EXISTING POWER POLE
- TEMPORARY SIGNAL POLE W/ GUY
- CONTROLLER CABINET
- NEW SIGNAL HEADS
- TEMPORARY AERIAL POWER
- DETECTION ZONE
- 24" STOP BAR
- WOOD POLE WITH WAVETRONIX SMARTSENSOR "MATRIX" UNITS FOR STOP
- APPROXIMATE RIGHT OF WAY

PLAN

25 0 25 50

Scale of Feet

Ⓐ CMP 12/2/220 (POWER SOURCE)
INSTALL AERIAL POWER "A" TO "B".

Ⓑ TEMP. SIGNAL POLE.
INSTALL 35' CLASS 4 WOOD POLE, WITH GUY ANCHOR AND RISERS, 10' FROM END OF GUARDRAIL AND 5' BEHIND GUARDRAIL.
INSTALL SERVICE METER AND POLE-MOUNTED CONTROLLER.
INSTALL WAVETRONIX SMARTSENSOR "MATRIX" FOR STOP DETECTION FOR LEGION ROAD.

Ⓒ TEMP. SIGNAL POLE. AERIAL CONDUCTORS "B" TO "C".
INSTALL 40' CLASS 4 WOOD POLE, WITH GUY ANCHOR, 65' FROM BUCKNAM RD. FACE OF DELTA ISLAND, 10' BEHIND GUARDRAIL.
INSTALL WAVETRONIX SMARTSENSOR "MATRIX" FOR STOP DETECTION FOR BUCKNAM ROAD EASTBOUND.

Ⓓ TEMP. SIGNAL POLE. AERIAL CONDUCTORS "C" TO "D".
INSTALL 40' CLASS 4 WOOD POLE, WITH GUY ANCHOR, 65' FROM BUCKNAM RD. FACE OF DELTA ISLAND, 8' OFF EDGE SHOULDER.
INSTALL TWO WAVETRONIX SMARTSENSOR "MATRIX" UNITS FOR STOP DETECTION FOR EXIT RAMP AND BUCKNAM RD. WESTBOUND.

Ⓔ TEMP. SIGNAL POLE. AERIAL CONDUCTORS FROM "D" TO "E".
INSTALL 35' CLASS 4 WOOD POLE, WITH GUY ANCHOR, 30' FROM BUCKNAM RD. EDGE SHOULDER, 15' FROM LEGION ROAD PAVEMENT EDGE. INSTALL PHASE 6 HEADS ON SPANWIRE "E" TO "B" WITH MINIMUM REQUIRED VERTICAL CLEARANCE OVER LEGION ROAD.

APPROXIMATE AERIAL UTILITY VERTICAL CLEARANCES OVER LEGION ROAD

TELEPHONE #1: 17'-7"
TELEPHONE #2: 18'-7"
CATV #1: 19'-8"
CATV #2: 21'-4"
CATV #3: 23'-3"
UTILITY SPANWIRE: 25'-6"± (NO CONDUCTORS)
ELECTRIC NEUTRAL: 28'-0"±
3-PHASE ELECTRIC PRIMARY: 31'-6"

NOTE:
INSTALL SPANWIRE "B" TO "C" BETWEEN CATV #3 AND UTILITY SPANWIRE.
INSTALL SPANWIRE "D" TO "E" 1' ABOVE UTILITY SPANWIRE.

OTHER SIGNING NOTES

INSTALL W23-2 SIGN EASTBOUND ON BUCKNAM ROAD APPROXIMATELY 750' BEFORE STOP BAR.

INSTALL W23-2 SIGN WESTBOUND ON BUCKNAM ROAD APPROXIMATELY 475' BEFORE STOP BAR.

INSTALL W3-4 SIGNS EASTBOUND AND WESTBOUND ON BUCKNAM ROAD APPROXIMATELY 350' BEFORE STOP BARS.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

IM-1108(600)X

WIN 11086.00

HIGHWAY PLANS

PROJ. MANAGER	ERNIE MARTIN		
DESIGN-DETAILED	ALG	BY	ALG
CHECKED-REVIEWED	ALG	DATE	1-13
DESIGN2-DETAILED2		BY	JLE
DESIGN3-DETAILED3		DATE	1-13
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
4226
P.E. NUMBER
JANUARY 9, 2013
DATE

FALMOUTH
I-295 EXIT 10 NB

TEMPORARY SIGNAL PLAN

SHEET NUMBER
3
OF 4

Filename: ...\003_temp_signal_plan WHITE.dgn Division: HIGHWAY Username: jeason Date:1/10/2013

TEMPORARY SIGNAL NOTES

1. ALL WORK SHALL BE COMPLETED IN CONFORMANCE WITH THE LATEST REVISIONS OF THE STATE OF MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. HEADS SHALL BE POLYCARBONATE WITH DOUBLE SPANWIRE SUPPORT. ALL SIGNAL HEADS SHALL BE STABILIZED WITH A BOTTOM TETHER.
3. MINIMUM CLEARANCE TO THE BOTTOM OF SIGNAL HEADS SHALL BE 16'.
4. SIGNAL FACES SHALL HAVE 5" RETROREFLECTIVE LOUVERED BACKPLATES.
5. RADAR DETECTION FOR PRESENCE AT STOP BARS SHALL BE WAVETRONIX SMARTSENSOR "MATRIX". OR APPROVED EQUAL.
6. THE CONTRACTOR SHALL INSTALL A SELF-CONTAINED METER SOCKET BYPASS (SINGLE PHASE 100 OR 150 AMP) WITH A SINGLE HANDLE LEVER-OPERATED BYPASS FOR POWER SHUTOFF TO THE METER WITHOUT INTERRUPTING THE SIGNAL DISPLAYS. A NEMA 3R METER DISCONNECT ENCLOSURE SHALL BE INSTALLED EXTERNAL TO THE CONTROLLER CABINET BETWEEN THE METER AND THE CABINET.
7. THE CONTROLLER SHALL BE NEMA TS-2 TYPE INSTALLED IN A NEMA TS-2 POLE-MOUNTED CABINET.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE PRESENCE OF UNDERGROUND UTILITY FACILITIES PRIOR TO COMMENCING ANY EXCAVATION WORK OR INSTALLATION OF POLES. ANCHORS. OR GROUND-MOUNTED SIGNAGE AND SHALL NOTIFY UTILITIES OF PROPOSED WORK IN ACCORDANCE WITH MRSA TITLE 23 SECTION 3360-A. MAINE "DIG SAFE" SYSTEM.
9. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITIES TO ASSURE THAT REQUIRED CLEARANCES ARE MET.
10. EXISTING CONFLICTING MARKINGS SHALL BE REMOVED AND CONFLICTING SIGNAGE COVERED DURING OPERATION OF THE TEMPORARY TRAFFIC SIGNAL. AS DIRECTED BY THE RESIDENT.
11. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST 48 HOURS BEFORE ANY OPERATIONS ARE CONDUCTED THAT POTENTIALLY COULD CONFLICT WITH AERIAL UTILITIES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING AND SUBMITTING A TRAFFIC MAINTENANCE PLAN FOR USE DURING INSTALLATION OF THE TEMPORARY TRAFFIC SIGNAL IN ACCORDANCE WITH MAINEDOT REQUIREMENTS AND THE LATEST EDITION OF THE MUTCD.
13. ALL TEMPORARY WARNING SIGNAGE SHALL HAVE ORANGE BACKGROUND.
14. MAINTENANCE OF THE TEMPORARY TRAFFIC SIGNAL AND ASSOCIATED SIGNING AND MARKINGS SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR UNTIL PROJECT ACCEPTANCE BY MAINEDOT.
15. PAYMENT UNDER PAY ITEM 643.72 FOR THE TEMPORARY TRAFFIC SIGNAL SHALL INCLUDE, BUT IS NOT LIMITED TO, WOOD POLES, GUY LEADS AND ANCHORS, AERIAL SERVICE AND METER, POLE RISERS, BRACKET ARMS, CONTROLLER, CABINET, PRESENCE DETECTION AT STOP BARS , AND ALL APPURTENANCES AND INCIDENTALS NECESSARY FOR A COMPLETE FUNCTIONING TEMPORARY TRAFFIC SIGNAL INSTALLATION. PAVEMENT MARKINGS AND SIGNAGE INSTALLED AND REMOVED IN CONJUNCTION WITH THE TEMPORARY SIGNALIZATION WILL BE PAID UNDER THE APPLICABLE PAY ITEMS OF SECTION 627 AND SECTION 645.

GENERAL NOTES

1. ANY CLEARING OR TRIMMING WITHIN THE RIGHT OF WAY THAT IS CONSIDERED BY THE RESIDENT TO BE NECESSARY TO PROVIDE UNOBSTRUCTED RADAR DETECTION OR FOR INSTALLATION OF TEMPORARY POLES AND ANCHORING SHALL BE PERFORMED INCIDENTAL TO PAYMENT FOR THE TEMPORARY TRAFFIC SIGNAL.
2. ANY DAMAGE TO SLOPES CAUSED BY THE CONTRACTOR'S EQUIPMENT, PERSONNEL, OR OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE RESIDENT, WITH NO ADDITIONAL PAYMENT.
3. TEMPORARY POLES, ANCHORS, ELECTRICAL SERVICE, TRAFFIC SIGNAL AND DETECTION HARDWARE, AND TEMPORARY SIGNAGE AND PAVEMENT MARKINGS INSTALLED FOR THE TEMPORARY SIGNALIZATION SHALL BE REMOVED BY THE CONTRACTOR UPON NOTICE FROM THE RESIDENT THAT THE TEMPORARY TRAFFIC SIGNAL IS NO LONGER REQUIRED. ALL EQUIPMENT AND SIGNAGE REMOVED SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. HOLES CREATED BY REMOVALS WILL BE FILLED AND COMPACTED WITH APPROVED MATERIALS AS DIRECTED BY THE RESIDENT. SOIL REMOVED FOR INSTALLATION OF WOOD POLES SHALL BE DISPOSED OF AT LOCATIONS APPROVED FOR DISPOSAL OF SUCH MATERIAL. DISTURBED AREAS SHALL BE SEEDED WITH SEEDING METHOD NO. 2 AND MULCHED. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
4. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE MAINE DEPARTMENT OF TRANSPORTATION'S BEST MANAGEMENT PRACTICES FOR EROSION CONTROL & SEDIMENT CONTROL, FEBRUARY, 2008. PAYMENT FOR TEMPORARY EROSION CONTROL MEASURES WILL BE INCIDENTAL TO THE CONTRACT.
5. INSTALL VARIABLE MESSAGE SIGNS AS FOLLOWS:

   (A) ON MTA CONNECTOR EASTBOUND.

   MESSAGE: EXIT 15 NB CLOSED
   USE ROUTE 1

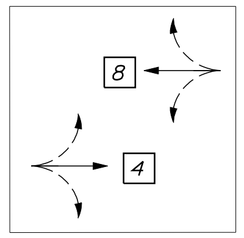
   (B) ON I-295 NB SOUTH OF EXIT 15.

   MESSAGE: EXIT 15 NB CLOSED
   USE EXIT 17

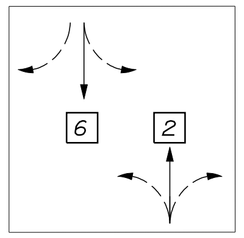
6. PROGRAM EXISTING VMS ON I-295 NB SOUTH OF EXIT 10 WITH THE FOLLOWING MESSAGE:

   EXIT 15 NB CLOSED
   USE ROUTE 1

PHASING SEQUENCE



BUCKNAM ROAD



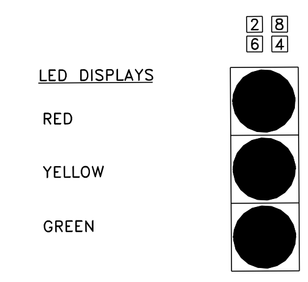
NB EXIT RAMP & LEGION RD.

INITIAL SIGNAL TIMING

PHASE	1	2	3	4	5	6	7	8
MIN INITIAL	-	4.0	-	4.0	-	4.0	-	4.0
VEH EXT	-	3.0	-	3.0	-	3.0	-	3.0
MAX. GREEN 1	-	17.0	-	32.0	-	17.0	-	32.0
YELLOW	-	3.6	-	3.6	-	3.6	-	3.6
ALL RED	-	1.8	-	2.1	-	1.8	-	2.1
FLASH	-	R	-	Y	-	R	-	Y
RECALL	-	-	-	SOFT	-	-	-	SOFT

NB EXIT RAMP AND LEGION ROAD INDICATIONS SHALL REST ON RED.

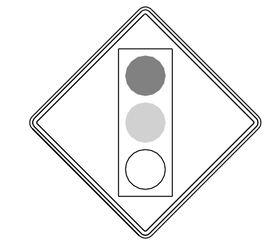
SIGNAL HEAD DETAIL



NO.REQUIRED 8

ALL SIGNAL FACE DISPLAYS SHALL BE 12" LED
ALL SIGNAL FACE DISPLAYS SHALL HAVE TUNNEL VISORS

SIGN DETAILS



W3-3
2 REQUIRED (GROUND)
36"X36"

W23-2
2 REQUIRED (GROUND)
36"X36"

W3-4
2 REQUIRED (GROUND)
36"X36"

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

IM-1108(600)X

WIN 11086.00

HIGHWAY PLANS

	BY	DATE
PROJ. MANAGER	ERNIE MARTIN	
DESIGN-DETAILED	ALG	1-13
CHECKED-REVIEWED	ALG	1-13
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

4226
P.E. NUMBER

January 9, 2013
DATE

FALMOUTH
I-295 EXIT 10 NB

TEMPORARY SIGNAL DETAILS

SHEET NUMBER

4

OF 4

Filename: ...\004_INTERSECTION_DETAIL_02.dgn Division: HIGHWAY Username: jeason Date:1/10/2013