SPECIAL PROVISION

SECTION 044302

GRANITE - SITEWORK

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. The provisions of the 2020 Standard Specifications, with the following additions shall apply:

1.2 SUMMARY

A. Provide all equipment and materials, and do all work necessary to furnish and install the granite work for monolithic granite benches, retaining walls and stairs, as indicated on the Drawings.

1. Salvaged granite blocks for monolithic stone walls.
2. New, off-site solid granite treads for site stairs.
3. New, off-site granite for stone block bench seating.

1.3 RELATED WORK

A. Examine Contract Documents for requirements that affect the work of this Section. Other Specification Sections that relate directly to work of this Section include, but are not limited to:

1. Section 033001, CAST-IN-PLACE CONCRETE - SITEWORK; Concrete base.
2. Section 055501, METAL FABRICATIONS - SITEWORK.

1.4 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

1. American Society for Testing and Materials (ASTM):

C 144	Aggregate for Masonry Mortar
C 150	Portland Cement
A 167	Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
C 207	Hydrated Lime for Masonry Purposes
C 270	Mortar for Unit Masonry
C 615	Structural Granite
D 1752	Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

2. National Building Granite Quarries Association, Inc. (NBGQA): Specifications for Architectural Granite

1.5 SUBMITTALS

A. Sustainable Design Submittals:

1. Product Data: For recycled content, indicating postconsumer and pre-consumer recycled content and cost.
2. Product Certificates: For regional content, indicating location of material manufacturer, location(s) of purchase, and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost.
3. Environmental Product Declaration: For each product.
4. Material Ingredients Certificates: For each product.

B. Samples: Samples of the following shall be submitted:

Item	Quantity and Size
Dowels	One each of each size, 4 in. length
Granite tread	One section required, full thickness x full width x 4 ft. long, specified color and finish.
Granite Block Bench	One section required, full thickness x full width x 4 ft. long, specified color and finish.
Reclaimed blocks for wall	One section required, full thickness x full width x 4 ft. long, specified color and finish.
Mortar grout	Cured sample, 2 in. x 2 in. of selected color

1. Granite sample shall fully demonstrate color, shade, veining, texture, range, and finish.

C. Manufacturer's Product Data: Manufacturer's product data shall be submitted for the following items:

1. Expansion joint filler
2. Grout materials, including additives
3. Mortar coloring additive
4. Mortar materials, including additives

D. Shop Drawings: Cutting and setting drawings of granite pieces specified herein shall be submitted. Drawings shall indicate sizes, dimensions, layout, finishes, edging, radius edges, arrangement and provisions for jointing, anchoring, cut-out and holes, and other necessary details for reception of other work.

1. Drawings shall indicate locations of inserts for stone anchors and supports which are to be built into concrete, and locations and dimensions of cut-outs, holes, openings, and other provisions required for the work of other trades. The shop drawings should indicate the connections from stone to stone creating a monolithic granite block wall and granite steps
2. Shop drawings shall indicate the setting number of each piece and each piece shall bear the corresponding number in a non-staining paint.

E. Contractor's Review: Before commencing work, submit signed statement that Contract Documents have been reviewed with a qualified representative of granite supplier, and that selected materials and construction are proper, compatible, and adequate for application shown.

F. Test Report: Submit reports from tests conforming to ASTM C 67 methods indicating:

1. Compressive strength, psi. (ASTM C 170)
2. Density, lbs./c.f. (ASTM C 97)
3. Absorption by weight, % (ASTM C 97)
4 Abrasion resistance (ASTM C 241)
5. Flexural strength psi, (MPa) (ASTM C 880)

1.6 SAMPLE INSTALLATIONS

A. Provide sample block bench installation as directed by Resident, conforming to typical Project construction. Sample shall show the proposed granite type, color, and finish, setting system, relationship to paving, jointing and other pertinent details of installation.

B. Replace sample installation as many times as necessary until Resident's approval of the installation has been obtained. Upon Resident's approval, construct all subsequent granite work to conform to approved sample installation.

1.7 COORDINATION

A. Coordinate work with that of other sections affecting, affected by, this work, as necessary to assure the steady progress of the work under the Contract.

B. Do all cutting and drilling to accommodate work of other sections, as expressly indicated and as reasonably inferred from Contract Documents Specifications, or required for the proper completion of the Work.

1.8 DELIVERY, HANDLING, AND STORAGE

A. Granite shall be carefully packed and banded by the supplier for shipment. Following shipping granite shall be stored on wood skids or pallets, covered with non-staining, waterproof membrane and protected from the weather. Skids shall be placed and stacked in such a manner as to evenly distribute the weight of the granite materials and to prevent breakage, cracking, and damage to granite pieces. Granite materials shall be stored in such a manner as to allow air to circulate around the granite material. Granite shall not be permitted to be in direct contact with the ground any time during storage.

B. Granite shall be carefully handled to prevent chipping, breakage, soiling, or other damage. Pinch or wrecking bars shall not be used without protecting edges of granite with wood or other rigid materials. Granite units shall be lifted with wide-belt type slings wherever possible; wire rope or ropes containing tar or other substances which might cause staining or damage to granite finish shall not be used.

C. Granite damaged in any manner will be rejected and shall be replaced with new materials at no additional cost to the Owner.

1.9 PROTECTION OF FINISHED SURFACES

A. Finished surfaces adjacent to the granite work shall be adequately protected from soiling, staining, and other damage.

1.10 QUALITY ASSURANCE

A. Granite shall be supplied by a source approved by the Resident.

B. Granite shall conform to the requirements of ASTM C 615, Architectural Grade and NBGQA Specifications, except as modified herein.

C. Granite shall be standard grade, free of cracks, seams, starts, or other defects which may impair its strength, durability or appearance. Exposed surfaces shall be free from spots, spalls, chips, stains, discoloration, or other defects which would affect its appearance. Color, texture and finish shall be within the range of samples approved by the Resident.

1.11 JOB CONDITIONS

A. Cold Weather Protection:

1. Remove any ice or snow formed on granite or concrete bed by carefully applying heat until top surface is dry to touch.
2. Remove granite work determined to be damaged by freezing conditions.
3. Latex admixture shall be kept at 40^{O}F. minimum.

B. Cold Weather Protection for Completed Granite Work:

1. Do not use frozen materials or materials mixed or coated with ice or frost. Do not lower the freezing point of mortar by use of admixtures or antifreeze agents, and do not use calcium chloride in mortar or grout.
2. Do not build on frozen work; remove and replace granite work damaged by frost or freezing.
3. During all seasons, protect partially completed granite work against weather when work is not in progress.

PART 2 PRODUCTS

2.1 GENERAL STANDARDS

A. Quarrying Supervision

1. Quarrying shall be supervised and coordinated by the granite fabricator to insure that the as-quarried block orientations will yield finished material with characteristics as described herein.
2. All granite shall be cut from matched blocks. Matched blocks shall mean blocks extracted from a single bed of stratum in the quarry. The use of blocks chosen at random, though similar in general character and color to that of the approved granite will not be permitted, except by written permission of the Resident.

B. Examinations

1. Examination at the Quarry: Quarried blocks shall be made available for inspection by the Resident at his request.
2. Examination at the Fabrication Plant: Production units shall be made available for inspection by the Resident at his request. To this end, the Subcontractor shall, after approval of final shop drawings, advise the Resident when production has begun and of the earliest possible opportunity to inspect a representative sampling of production work.
3. Contractor shall provide lighting that is sufficient in intensity and color range to permit an adequate examination to the satisfaction of the Resident.

C. Criteria for Granite

1. Visual: All examinations, selections, and approvals shall be for the purpose of achieving a final appearance of granite with greatest possible uniformity, and will be based upon the following criteria:
2. All granite shall be of sound stock and uniform texture, and shall be free from holes, seams, shakes, clay pockets, spalls, stains, starts, and other defects which would impair the strength, durability and appearance of the work, as determined by the Resident.
3. Inherent variations characteristic of the granite and the quarry from which the granite is to be obtained shall be brought to the attention of the Resident at the time the samples are submitted for approval, and shall be subject to approval of the Resident.
4. All granite shall be selected for background color, veining, marking and matching, shall run in even shades, and shall be set accordingly.

D. Physical and Mechanical: Contractor to submit data to the Resident.

1. Absorption and Bulk Specified Gravity (ASTM C 97).
2. Flexural strength (ASTM C 880).
3. Compressive Strength (ASTM C 170).
4. Modulus of Rupture (ASTM C 99).
5. Abrasion Resistance, Hardness (ASTM C 241).

E. Any granite materials rejected for non-compliance with these standards shall be replaced at no additional cost to the Owner.

2.2 STONE FABRICATION

A. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated, including details on Drawings and Shop Drawings.

1. For granite, comply with recommendations in NBGQA's "Specifications for Architectural Granite."

B. Cut and drill sinkages and holes in stone for anchors, fasteners, supports, and lifting devices as indicated or needed to set stone securely in place; shape beds to fit supports.

C. Cut stone to produce pieces of thickness, size, and shape indicated and to comply with fabrication and construction tolerances recommended by applicable stone association or, if none, by stone source, for faces, edges, beds, and backs.

1. Clean backs of stone to remove rust stains, iron particles, and stone dust.

D. Contiguous Work: Provide chases, reveals, reglets, openings, and similar features as required to accommodate contiguous work.

E. Finish exposed faces and edges of stone, except sawed reveals, to comply with requirements indicated for finish and to match approved samples and mockups.

F. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

1. Grade and mark stone for overall uniform appearance when assembled in place. Natural variations in appearance are acceptable if installed stone units match range of colors and other appearance characteristics represented in approved samples and mockups.

G. Flatness Tolerance: Variation from true plane, or flat surfaces, shall be determined by use of a 4 ft. long straightedge, applied in any direction on the surface. Such variations on polished, honed and fine rubbed surfaces at the bed and joint arris lines shall not exceed 3/64 in. or 1/16 of the specified joint width, whichever is greater. On surfaces having other finishes the maximum variation from true plane shall not exceed 1/4 of the specified joint width.

H. Variations from true plane on other parts of face surfaces shall not exceed the following:

1. 4-cut and sawn finishes 1/8 in.
2. Thermal and coarse stippled sandblasted finishes 3/16 in.

I. Backs of pieces shall be sawn or roughly dressed to approximate true planes. Maximum variation in thickness from the specified shall not exceed the following:

1. 1/2 in. on pieces above 3 in. modular thick

2.3 GRANITE

A. Granite shall be sound and uniform in quality, texture, and strength, and shall be free of any flaws, reeds, rifts, laminations, seams, or defects which would impair its strength, durability, or appearance.

1. Absorption by weight shall not exceed 0.4 %
2. Compressive strength of not less than 19,000 psi.
3. Minimum density of 160 pcf.
4. Finish: Unless otherwise indicated, all exposed surfaces shall be thermal finished. Granite surfaces which will be concealed in the finished work shall be sawn to approximately true planes.

B. Unless otherwise noted, granite shall be of the sizes and dimensions indicated on the Drawings.

1. All faces shall be at right angles to the plane of the top.
2. Granite shall be cut accurately to required shapes and dimensions.

C. New, off-site granite shall be supplied by Granites of America, 15 Branch Pike Smithfield, RI 02917, or other sources reviewed according to substitution requirements specified in the Conditions of the Contract.

1. Sizes: as indicated on the Drawings.
2. Finish of Stones. Split face quarry blocks on all exposed faces. Concealed faces shall be sawn.
3. Color: Deer Isles

D. Reclaimed/Salvaged granite for block walls shall be selected in accordance with Special Provision Section 525 Granite Masonry.

1. Sizes: as indicated on the Drawings.
2. Finish of Stones. Natural weathered on all exposed faces. Concealed faces shall be sawn.

2.4 SETTING BED MORTAR

A. Setting bed mortar shall be equal to "Laticrete 3701 Fortified Mortar Bed", a polymer fortified blend of carefully selected polymers, portland cement and graded aggregates, manufactured by Laticrete International, Inc., One LATICRETE Park North, Bethany, CT 06524-3423 USA · 1.800.243.4788 · +1.203.393.0010, or approved equal. Mix with water according to manufacturer's instructions.

2.5 THIN SET BED AND/OR BOND COAT

A. High strength bond coat between concrete base slab and setting bed mortar, and between setting bed mortar and brick paver shall be equal to "Laticrete 254 Platinum", one-step, polymer fortified, thin-set mortar bond coat, manufactured by Laticrete International, Inc., One LATICRETE Park North, Bethany, CT 06524-3423 USA · 1.800.243.4788 · +1.203.393.0010, or approved equal.

2.6 MORTAR GROUT FOR POINTING

A. Sanded Grout: shall be 1500 Sanded Grout, a premium, factory prepared grout designed to be mixed with water, formulated from a blend of high strength portland cement, graded aggregates, polymers and color-fast pigments to provide a grout joint that is dense, hard and durable, manufactured by Laticrete International, Inc., One LATICRETE Park North, Bethany, CT 06524-3423 USA · 1.800.243.4788 · +1.203.393.0010, or approved equal.

1. For grout joint widths of 1/16" (1.5 mm) up to 3/8" (9 mm).
2. Color shall match color of granite.

2.7 EXPANSION JOINT FILLER

A. Preformed expansion joint filler shall be a nonextruding, resilient, nonbituminous type, conforming to ASTM D 1752, Type II.

2.8 ANCHORAGE AND SETTING MATERIALS

A. Pins, Dowels, Anchor Bolts, Nuts, Washers, and Shims: Type and size required to securely anchor and fasten stonework in place and as indicated on the Drawings. Fabricate from AISI Type 302/304 stainless steel.

B. Epoxy adhesive for fastening stainless steel dowels into adjoining limestone blocks and/or concrete foundations shall be a two-component, 100% solids, moisture-insensitive, high-modulus, high strength, structural, epoxy paste adhesive conforming to ASTM C 881, similar to “Sikadur 31, Hi-Mod Gel”, manufactured by Sika, Glendale Heights, IL 60139, or approved equal.

C. Provide lead or plastic setting buttons sized to maintain uniform joints.

PART 3 EXECUTION

3.1 ACCEPTABILITY OF CONCRETE BASE

A. Contractor shall examine the concrete foundation to determine its adequacy to receive granite unit and mortar setting bed. Evidence of inadequate condition shall be brought to the immediate attention of the Resident.

B. Start of work of this Section shall constitute acceptance of the concrete foundation.

3.2 SETTING

A. The grades need to be staked, elevations confirmed and approved by the Resident before granite is to be set.

B. All setting shall be done by competent granite setters under adequate supervision and in accordance with the approved shop drawings.

C. Granite units with chips, cracks, stains, or other defects which might be visible in the finished work shall not be used.

D. Before setting, granite shall be clean and free of dirt, and foreign matter on all sides. Granite shall be dry before setting.

E. Granite shall be set true to the required lines and grades. Joints shall be uniform in thickness. Expansion joints shall be 1/2 in. wide. Unless otherwise indicated on the Drawings all other joints shall be 1/4 in. wide. Direct bearing contact between granite pieces shall be prohibited.

F. Before setting, the back of each granite piece shall be dampened and shall receive a slurry of mortar to ensure maximum contact with mortar bed. Each piece shall be carefully bedded in a full bed of mortar and tapped home with a rawhide mallet to a full and solid bearing. Particular care shall be exercised to equalize bed and joint openings and eliminate the need for redressing of exposed surfaces.

G. Exposed surfaces shall be kept free from mortar at all times. Any mortar smears shall be immediately removed with a clean sponge and clean water before latex modified mortar can set.

H. Holes, slots, and other sinkages for anchors, and dowels, shall be completely filled with mortar during setting of granite.

I. All joints except expansion joints shall be completely filled with mortar, then raked out to a depth of not less than 3/4 in. Raked joints shall be brushed clean and pointed with colored mortar to a flat cut joint. Mortar grout between granite pieces shall be uniform in appearance, texture, and color. After initial set of mortar, joints shall be finished by tooling with a rounded, non-staining jointer to produce a glassy-hard, polished, slightly, concave joint, free of drying cracks.

1. Field measurements must verify wall length to actual field conditions.

J. Granite sections shall be set according to the details and locations indicated on the Drawings.

K. Expansion joints shall be located as indicated on the Drawings. Expansion joint shall be 1/2 in. wide. Preformed joint filler shall be installed between granite units at expansion joint locations.

3.3 CLEANING

A. After pointing granite work shall be carefully cleaned, removing all dirt, excess mortar, stains, and other defacements.

1. Mild abrasive cleaners that contain no harsh or caustic ingredients may be used, with fiber brooms or brushes and clear water. Wire brushes, steel wool, and acids or other solutions which may cause discoloration are expressly prohibited.
2. Expansion joints and other joints to receive sealant shall be cleaned of all mortar and left ready for sealing of joints under Section 079202, EXTERIOR JOINT SEALANTS - SITEWORK.

B. Upon completion of granite work, surfaces shall be left in a clean, unsoiled condition, acceptable to the Resident.

3.4 PROTECTION

A. Granite work shall be properly and adequately protected under the responsibility of the Contractor until final acceptance of the Project by Owner.

B. After the granite work has been installed, it shall be properly and adequately protected from damage. Boxing or other suitable protection shall be provided by Contractor wherever required. However, no lumber which may stain or deface the granite shall be used. Nails shall be high-quality galvanized or non-rusting.

END OF SECTION

SPECIAL PROVISION

SECTION 057301

EXTERIOR METAL HANDRAILS AND GUARDRAILS

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. The provisions of the 2020 Standard Specifications, with the following additions shall apply:

1.2 SUMMARY

A. Work of this Section includes, but is not limited to:

1. Stainless steel handrails at steps.

1.3 RELATED WORK

A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to:

1. Section 033001, CAST-IN-PLACE CONCRETE – SITEWORK.
2. Section 044302, GRANITE – SITEWORK; Granite treads.

1.4 REFERENCES

A. Comply with applicable requirements of following standards. Where these standards conflict with other specified requirements, most restrictive requirement shall govern.

1. American Institute of Steel Construction (AISC):

Code	Code of Standard Practice for Steel Buildings and Bridges
Specification	Specification for the Design, Fabrication and Erection of Structural Steel for Buildings

2. American Society for Testing and Materials (ASTM):

A 36	Structural Steel
A 53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
A 123	Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars, and Strip
A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware

A 167	Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
A 312	Seamless and Welded Austenitic Stainless Steel Pipe
A 385	High-Quality Zinc Coatings (Hot-Dip)
A 386	Zinc Coating (Hot-Dip) on Assembled Steel Products
A 501	Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
A 554	Welded Stainless Steel Mechanical Tubing
A 588	High –Strength Low Alloy Structural Steel with 50 ksi [345 MPa] Minimum Yield Point to 4 in. [100mm] Thick
A 743	Castings, Iron-Chromium, Iron-Chromium Nickel, and Nickel-Base Corrosion-Resistant for General Application

3. State of Maine Building Code:

Code	State Building Code

4. Corps of Engineers (CE):

CRD-C-621	Specification for Nonshrink Grout

5. American Welding Society (AWS):

D1.1	Structural Welding Code - Steel
D1.6	Structural Welding Code – Stainless Steel

1.5 QUALITY ASSURANCE

A. Conform to governing laws, building code, and following standards, as applicable:

1. AISC Code and AISC Specification.
2. National Association of Architectural Metal Manufacturers (NAAMM), applicable publications.

B. Installer: A firm with at least three years' experience in Work of type required by this Section.

C. Source: For each type of material required for Work of this Section, provide primary materials that are products of one manufacturer. Provide secondary materials that are acceptable to manufacturers of primary materials.

D. Engineering: Provide services of a Professional Engineer, registered in the State of Maine to design and certify that Work of this Section meets or exceeds performance requirements specified.

E. Shop Assembly: Preassemble handrails and guardrails to greatest extent possible to minimize field splicing. Disassemble units as required for shipping and handling. Clearly mark units for reassembling in field.

1.6 MOCKUPS

A. General: Install at project site or appropriate location a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Resident's approval of product, application, and workmanship standards. Comply with Division 1 Mock-Up Requirements.

B. Handrail Mock-up: Before beginning primary Work of this Section, provide one (1) 4 ft. long mock-up, full dimension, at location acceptable to Resident and obtain Resident's acceptance of visual qualities for handrail. Protect and maintain acceptable mock-up throughout Work of this Section to serve as criteria for acceptance of this Work.

1.8 SUBMITTALS

A. Product Data: Submit manufacturer's product data, installation instructions, use limitations and recommendations for each material used. Provide certifications stating that materials comply with requirements.

B. Shop Drawings: Provide large scale shop drawings for fabrication, installation and erection of parts of Work. Provide plans, elevations, and details of anchorages, connections and accessory items. Provide installation templates for Work installed by others.

C. Field Measurements: Take accurate field measurements before preparation of shop drawings and fabrication. Do not delay job progress. Allow for field cutting and fitting where taking field measurements before fabrication is not possible.

D. Calculations: Provide professionally prepared calculations and certification of performance of this Work by a structural engineer licensed in the State of Maine. Show how design load requirements and other performance criteria have been satisfied.

E. Samples: Submit representative samples of each material that is to be exposed in finished Work, showing full range of color and finish variations expected.

1. Provide minimum 12 in. long samples of handrails.
2. Provide samples of exposed fittings and brackets.

1.9 DELIVERY, STORAGE AND HANDLING

A. Deliver railings and posts wrapped in manufacturer's standard protective coverings. Deliver brackets, fittings, sleeves, fasteners and other miscellaneous materials and products in factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from possible damage.

B. Sequence deliveries to avoid delays, but minimize on-site storage.

1.10 PROJECT CONDITIONS

A. Weather: Perform exterior Work only when existing and forecasted weather conditions are within limits established by manufacturers of materials and products used.

B. Proceed with Work only when substrate construction is complete.

1.11 SEQUENCING AND SCHEDULING

A. Conference: Convene a pre-installation conference to establish procedures to maintain optimum working conditions and to coordinate this Work with related and adjacent Work.

1.12 PERFORMANCE REQUIREMENTS

A. Structural Performances: Provide installed handrail and railing and guardrail assemblies complying with following structural performances, unless otherwise indicated:

1. Live Loads shall not be less than the minimum required by applicable building codes.
2. Design shall incorporate safety factors as required by the applicable building codes.
3. Design and construction shall be as such to assure that under the required design live loads there shall be no failure of any member, deflection of not more than L/240 of length of any member, and without permanent deformation of any member or fastener.

B. Handrails and Guards: Handrails and guards shall be designed to resist a lateral load of 50 pounds per linear foot (plf) applied in any direction at the top and to transfer this load through the supports to the structure.

1. Concentrated Load: Handrails and guards shall be able to resist a single concentrated load 200 pounds, applied in any direction at any point along the top, and to transfer this load through the supports to the structure. This load need not be assumed to act concurrently with the uniform load specified above.
2. Components: Intermediate rails (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot, including openings and space between rails. Reactions due to this loading are not required to be superimposed with those of the previous sections.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Stainless Steel Handrails: Provide stainless handrail products of one of the following manufacturers that meet or exceed requirements specified:

1. Blum, Julius & Co., Inc.
2. CraneVeyor Corp.
3. KDI Paragon Inc.
4. Architectural Metal Works.
5. Blumcraft of Pittsburgh.
6. Pisor Industries, Inc.
7. Wylie Systems.

2.2 METALS

A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

2.3 STAINLESS STEEL

A. Stainless Steel: Comply with following standards and requirements for stainless steel components:

1. Pipe: ASTM A 312, Type 316L stainless steel.
2. Castings: ASTM A 743, Grade CF 8 or CF 20.
3. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316L.
4. Bars and Shapes: ASTM A 276, Type 316L.

2.4 FASTENERS

A. Fastener Materials: Unless otherwise indicated, provide the following:

1. Stainless steel Items: Type 316 stainless-steel fasteners.

2.5 FABRICATION

A. General: Fabricate handrails and railings to design, dimensions and details shown. Provide members in sizes and profiles indicated, with posts and brackets of size and spacings shown, but not less than required to support indicated design loads.

B. Fabricate Work to be truly straight, plumb, level and square.

C. Brackets, Flanges, Fittings and Anchors: Provide brackets, flanges, fittings and anchors for interconnection of handrail and railing components to other Work.

D. Welded Connections: Perform welding to comply with AWS for recommended practices, using method appropriate for metal and finish indicated. Grind exposed welds flush and smooth to blend with adjoining finish metal surfaces.

E. Bends: Form bends by use of prefabricated elbow fittings and radius bends, as applicable.

F. Curves: Form simple and compound curves by bending members in jigs designed to produce uniform curvature with uniform profile of member throughout entire bend without buckling, twisting or deforming in any way.

2.6 STAINLESS STEEL FINISH

A. Stainless Steel:

1. After fabrication, clean and de-scale stainless steel components in accordance with ASTM A 380.
2. Finish components with non-directional AISI Dull Satin Finish: No. 6 finish in accordance with ASTM B 912.

2.7 ANCHORING SYSTEMS

A. Epoxy Grout: Provide non-shrink, non-metallic, non-corrosive epoxy grout conforming to the following requirements:

1. Grout shall be manufactured specifically for use in supporting heavy loads.
2. Shrinkage at 28 days: None (0.00 shrinkage when tested in accordance with ASTMC827modified procedure) with a minimum effective bearing area (EBA) of 95 percent coverage of the tested base plate.
3. Compressive strength, minimum: 10,000 psi at seven days, when tested in accordance with ASTM C579.
4. Initial setting time: Approximately one hour at 70 degrees F.
5. Provide flowable consistency as necessary for the particular application.
6. Epoxy grouts which are volatile and which give off noxious fumes are not acceptable.

B. Epoxy Adhesive: ASTM C881, Type V, epoxy-based bonding agent.

C. Exposed fastenings shall be of the same material and finish as the metal to which applied, unless otherwise noted.

D. Welding rods shall conform to AWS Standards and the recommendation of the welding rod manufacturer. Welding of steel shall conform to AWS D1.6 At stainless steel work, welding rods shall be such as to produce absolute color and finish match between welds and the surrounding stainless steel.

2.8 ELECTROLYTIC SEPARATION/CORROSION RESISTANCE

A. Coating for electrolytic separation between steel and concrete and grout shall be a high-build coal tar epoxy providing one coat protection for steel and concrete in a variety of chemical, immersion and underground conditions, manufactured by Tnemec Company, Inc., 6800 Corporate drive, Kansas City, MO 64120-1372; Tel. 816-483-3400; Kop-Coat Inc, 436 Seventh Avenue, Pittsburgh, PA 15219-1818; 1/412/227-2700, parent company RPM, International 2628 Pearl Road - P.O. Box 777 - Medina, Ohio 44258; Phone: 330.273.5090 - Fax: 330.225.8743; Carboline Company, 2150 Schuetz Road, St. Louis, MO 63146; Phone: 800-848-4645 or 314-644-1000; FAX: 314-644-4617, or approved equal.

PART 3 EXECUTION

3.1 INSPECTION

A. The Installer/Erector shall examine substrates, supports, and conditions under which this Work is to be performed and notify Contractor, in writing, of conditions detrimental to proper completion of Work. Do not proceed with Work until unsatisfactory conditions are corrected. Beginning Work means Installer accepts substrates and conditions.

3.2 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads].

B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

D. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

E. Form work true to line and level with accurate angles and surfaces.

F. Fabricate connections that will be exposed to weather in a manner to exclude water.

G. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.

J. Form changes in direction as follows:

1. By bending to smallest radius that will not result in distortion of railing member.

K. Close exposed ends of hollow railing members with prefabricated end fittings.

L. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work, unless otherwise indicated.

M. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

N. For railing posts set in concrete, provide steel sleeves not less than 6 inches (150 mm) long with inside dimensions not less than 1/2 inch (12 mm) greater than outside dimensions of post, with steel plate forming bottom closure.

3.3 PREPARATION, INSTALLATION/ERECTION

A. Verify alignment, support dimensions, and tolerances are correct.

B. Inventory components to ensure all required items are available for installation. Inspect components for damage. Remove damaged components from site and replace.

C. Strictly comply with manufacturer's instructions and recommendations, except where more restrictive requirements are specified in this Section.

D. Installation, General: Provide anchorage devices and fasteners necessary for fastening handrail systems to in-place construction using manufacturer's standard connections. Coordinate and furnish anchorages, templates, setting drawings, instructions and recommendations for installation of items embedded in concrete or masonry construction.

1. Use manufacturer's supplied hardware.

E. Corrosion Protection: Provide neoprene pad, or coat concealed surfaces of metal with heavy coat of bituminous paint when metal surfaces will be in contact with grout, concrete, masonry, wood or dissimilar metals, as indicated on the Drawings.

F. Adjust handrails and guardrails prior to anchoring to ensure matching alignments at abutting joints. Space posts at intervals indicated, or as required by design loading.

3.4 TOLERANCES

A. The following allowable installed tolerances are allowable variations from locations and dimensions indicated by Contract Document and shall not be added to allowable tolerances indicated for other Work.

1. Allowable Variation from True Plumb: ± 1/8 in. in 20 ft.-0 in.
2. Allowable Variation from True Level: ± 1/8 in. in 20 ft.-0 in.
3. Allowable Variation from True Line: ± 1/8 in. in 20 ft.-0 in.

3.5 REPAIR OF DEFECTIVE WORK

A. Remove stained or otherwise defective work and replace with material that meets specification requirements.

1. Repair damaged finish in accordance with manufacturer’s printed instructions.
2. Touch-up damaged coatings and finishes to eliminate evidence of repair.
3. Remove and replace Work that cannot be successfully cleaned or repaired.

B. Stainless Steel Surfaces: Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

3.6 CLEANING

A. As installation is completed, wash thoroughly using clean water and soap; rinse with clean water.

B. Do not use acid solution, steel wool or other harsh abrasives.

C. If stain remains after washing, remove finish and restore in accordance with NAAMM/NOMMA Metal Finishes Manual.

3.7 PROTECTION

A. Provide temporary protection to ensure Work being without damage or deterioration at time of final acceptance. Remove protections and reclean as necessary immediately before final acceptance.

END OF SECTION

SPECIAL PROVISION

SECTION 055001

METAL FABRICATIONS - SITEWORK

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. The provisions of the 2020 Standard Specifications, with the following additions shall apply:

1.2 SUMMARY

A. The work of this Section includes, but is not limited to the following:

1. Miscellaneous steel framing and supports.

1.3 RELATED WORK

A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to:

1. Section 033001, CAST-IN-PLACE CONCRETE – SITEWORK; Concrete basin walls.

1.4 REFERENCES

A. Comply with applicable requirements of following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

1. American Iron and Steel Institute (AISI):

Specifications	Specifications for the Design of Light Gage Cold-Formed Steel Structural Members

2. American Society for Testing and Materials (ASTM):

A 27	Steel Castings, Carbon, for General Application
A 36	Structural Steel
A 53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
A 123	Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
A 307	Carbon Steel Externally Threaded Standard Fasteners

A 325	High Strength Bolts for Structural Steel Joints
A 366	Steel, Carbon, Cold-Rolled sheet, Commercial Quality
A 385	High-Quality Zinc Coatings (Hot-Dip)
A 386	Zinc Coating (Hot-Dip) on Assembled Steel Products
A 446	Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality
A 500	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
A 501	Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
A 588	High –Strength Low Alloy Structural Steel with 50 ksi [345 MPa] Minimum Yield Point to 4 in. [100mm] Thick
A 611	Steel, Cold-Rolled Sheet, Carbon, Structural
A 743	Castings, Iron-Chromium, Iron-Chromium Nickel, and Nickel-Base Corrosion-Resistant, General Application
A 780	Repair of Damaged Hot-Dip Galvanized Coatings
A 1011 / A1011M - 12b	Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
A 1008 / A1008M - 12a	Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

3. American Welding Society (AWS):

D1.1	Structural Welding Code--Steel.
D1.3	Structural Welding Code--Sheet Steel
D1.6	Structural Welding Code--Stainless Steel

4. Corps of Engineers (CE):

CRD-C-621	Specification for Nonshrink Grout

1.5 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.6 SUBMITTALS

A. Shop Drawings: Submit shop drawings of work showing size and thickness of each member, type of material, method of connection and assembly. Show dimensions, clearances, anchorages, relationships to surrounding work, coatings, and other pertinent details of fabrication and installation.

1. Show profiles, reinforcing, fasteners, and any accessories.
2. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.

B. Product Data: Provide manufacturer's product data, installation instructions, use limitations, and recommendations for each material used. Provide certifications that materials comply with requirements.

C. Sustainable Design Submittals:

1. Product Data: For recycled content, indicating postconsumer and pre-consumer recycled content and cost.
2. Product Certificates: For regional content, indicating location of material manufacturer, location(s) of purchase, and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost.
3. Product Data: For field-applied repair paints, indicating VOC content.
4. Laboratory Test Reports: For field-applied repair paints, indicating compliance with requirements for low-emitting materials.
5. Environmental Product Declaration: For each product.
6. Material Ingredients Certificates: For each product.

D. Calculations: Where installed metal fabrication work is indicated to comply with certain design loadings, provide professionally prepared calculations, material properties, certification, and other information required for structural analysis of performance of work.

E. Welders Certification: Provide certifications, signed by Contractor, certifying that welders employed at project comply with requirements specified under AWS.

1.7 GENERAL REQUIREMENTS

A. The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1/D1.1M. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123/A 123M, ASTM A 653/A 653M, or ASTM A 924/A 924M, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish,

and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

1.8 WORKMANSHIP

A. Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

1.9 ANCHORAGE

A. Anchorage for fastening miscellaneous metal items securely in place shall be provided as indicated on the Drawings. Anchorage not otherwise specified or indicated shall include slotted inserts made to engage with the anchors, expansion shields, and power-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; and lag bolts and screws for wood.

1.10 PRODUCT HANDLING AND STORAGE

A. Store work off ground and under cover. Protect from damage. Repair and clean work before erection.

1.11 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate field measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
2. Provide allowance for trimming and fitting at site.

B. Do not permit use of fabricated work until work is completely and fully installed and ready to assume intended design loads. Do not permit overloading of metal fabrication systems.

1.12 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.1 METALS

A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

2.2 STEEL

A. General: Provide products and materials of new stock, free from defects, and of best commercial quality for each intended purpose.

B. Steel Plates, Shapes, and Bars: ASTM A 36.

C. Steel Tubing: ASTM A 500 or A 501, hot or cold rolled, as required for design loading.

D. Steel Pipe: ASTM A 53, schedule 40, Type S (seamless), black except where galvanized is indicated, Grade A for cold-bending.

E. Steel Sheet: ASTM A 1011, or A 1008, grade required for design loading.

F. Preweathered Corten Steel: shall be a high-strength, low-alloy, atmospheric-corrosion-resistant structural steel, commonly called *weathering steel*, Grade 50 with a minimum yield stress of 50 ksi (345 MPa) conforming to ASTM A 588/A 588M.

1. Corten steel shall have a “preweatehred”, pre-oxidized surface produced by accelerating the natural weathering process and stabilizing the result, equal to Solanum Steel, manufactured by Zahner, 1400 East 9th Street, Kansas City, MO 64106; 1-816-474-8882.
2. All A588 weathering steel surfaces below finished grade in contact with soil shall be protected with waterproof corathane epoxy primer, manufactured by Sherwin Williams, PPG, Benjamin Moore or approved equal.

2.3 STAINLESS STEEL

A. Castings: ASTM A 743/A 743M, Grade CF 8M or CF 3M.

B. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316L.

C. Bars and Shapes: ASTM A 276, Type 316L.

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 316L stainless-steel fasteners for exterior use.

1. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts and, where indicated, flat washers; ASTM F 593 (ASTM F 738M) for bolts and ASTM F 594 (ASTM F 836M) for nuts, Alloy Group 2 (A4).

D. Anchor Bolts: ASTM F 1554, Grade 36.

1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

E. Eyebolts: ASTM A 489.

F. Machine Screws: ASME B18.6.3 (ASME B18.6.7M).

G. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

H. Wood Screws: Flat head, ASME B18.6.1.

I. Plain Washers: Round, ASME B18.22.1 (ASME B18.22M).

J. Lock Washers: Helical, spring type, ASME B18.21.1 (ASME B18.21.2M).

K. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

L. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. Material for Anchors in Exterior Locations: Alloy Group 2 (A4) stainless-steel bolts complying with ASTM F 593 (ASTM F 738M) and nuts complying with ASTM F 594 (ASTM F 836M).

M. Inserts: Threaded or wedge type, galvanized ferrous castings; either ASTM A 47 malleable iron, or ASTM A 27 cast steel. Provide threaded inserts and wedge inserts manufactured by one of the following or Resident approved equal:

1. Hohmann and Barnard.
2. Gateway Erections, Inc.
3. Richmond Screw Anchor Co.
4. Simpson.

N. Provide anchors, bolts, sockets, sleeves, and other parts required for securing each item of work to other construction. Furnish inserts and sleeves to be set into concrete formwork and concrete under Section 033001, CAST-IN-PLACE CONCRETE - SITEWORK.

1. Anchor bolts, bolts smaller than 5/8 in., and fasteners shall be steel castings conforming to ASTM A 307. Bolts larger than 5/8 in. shall conform to ASTM A 325.

2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Division 09.

E. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

G. Grout for Exterior Applications: Provide Factory-packaged, non-shrink, non-staining, hydraulic controlled expansion cement formulation for mixing with water at project site. Provide formulation that is resistant to erosion from water exposure without need for protection by a sealer or waterproof coating. Provide Super Por-Rok, Erosion-Resistant Anchoring Cement, manufactured by Minwax Construction Products Division, or equal as approved by Resident.

H. Nonshrink, Metallic Grout: Factory-packaged, ferrous-aggregate grout complying with ASTM C 1107, specifically recommended by manufacturer for heavy-duty loading applications.

I. Nonshrink, Non-staining, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.6 FABRICATION - GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Fabricate work of this Section to be straight, plumb, level and square, and to sizes, shapes and profiles indicated on approved shop drawings. Ease exposed edges. Cut, reinforce, drill and tap metal work as required for proper assembly.

1. Fabricate miscellaneous supports, brackets, braces and the like required to fully complete the work.
2. Obtain loading requirements from suppliers of work to be supported. Design and support systems with a safety factor of at least 6 unless otherwise indicated.
3. Allow for thermal movement resulting from 100°F change in ambient temperature.
4. Shear and punch metals accurately. Remove burrs.
5. Ease exposed edges to a radius of approximately 1/32 in., unless indicated otherwise. Form bent corners to smallest radius possible without causing grain separation or impairing work.
6. Remove sharp or rough areas on exposed traffic surfaces.
7. Weld seams continuously. Spot welding is permitted for temporary welding only.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

F. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

H. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

I. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

J. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

K. Work Exposed to View: For work exposed to view, select materials with special care. Provide materials which are smooth and free of blemishes such as pits, roller marks, trade names, scale and roughness. Fabricate work with uniform hairline joints. Form welded joints and seams continuously. Grind welds flush to be smooth after painting. For exposed fasteners, use hex head bolts or Phillips head machine screws.

L. Galvanizing: Hot-dip galvanize exterior steel fabrications where indicated on the Drawings, in compliance with ASTM A 123, ASTM A 153, or ASTM A 386. Provide minimum 1.5 oz./ft.^{2} zinc coating. Galvanize after fabrication.

2.7 FABRICATION

A. Miscellaneous Bearing and Leveling Plate Fabrication: Provide miscellaneous loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Fabricate units flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts as required.

B. Miscellaneous Bearing and Leveling Plate Fabrication: Provide miscellaneous loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Fabricate units flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts as required.

2.8 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.9 STEEL FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:

1. ASTM A 123/A 123M, for galvanizing steel and iron products.
2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

2.10 STAINLESS STEEL FINISH

A. Satin, Non-Directional: AISI No. 6 Finish.

B. Blackened Stainless Steel: Blackening process by hot black oxide or room temperature process as provided by EPI Electrochemical Products, Inc. 17000 W. Lincoln Ave. New Berlin, WI 53151-2781; Phone: 262-786-9330; Fax: 262-786-9403; us-sales@epi.com, or approved equal.

2.11 FINISH PAINT – GALVANIZED STEEL

A. Low-Emitting Materials: Comply with VOC content limits of authorities having jurisdiction.

1. For field applied paints and repair paints, also comply with LEED requirements for VOC content and emissions.

B. Field Finish Paint:

1. Color Coat: shall be Tnemec "No. 1070, 1071 or 1072 Fluoronar", Advanced Thermoset Solution Fluoropolymer coating, manufactured by Tnemec Co, Inc., Kansas City, MO 64141, or approved equal. Application shall be Two Coats (dry film 2.0 to 3.0 mils per coat). Color will be selected by the Resident from among the manufacturer's standard range of colors.

2.12 BITUMINOUS COATING

A. Coating for steel in contact with soil shall be a high-build coal tar epoxy providing one coat protection for steel and concrete in a variety of chemical, immersion and underground conditions, manufactured by Tnemec Company, Inc., 6800 Corporate Drive, Kansas City, MO 64120; Tel. (816) 483-3400; Kop-Coat Inc, 436 Seventh Avenue, Pittsburgh, PA 15219; Tel. (412) 227-2700; RPM International, 2628 Pearl Road, Medina, Ohio 44258; Tel. (330) 273.5090; Carboline Company, 2150 Schuetz Road, St. Louis, MO 63146; Tel. (800) 848-4645 or (314) 644-1000; or approved equal.

PART 3 EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorage devices, setting drawings, diagrams, templates, instructions, and directions for installation of concrete inserts, sleeves, anchor bolts, and miscellaneous items to be embedded or attached to concrete work, masonry work, or steel work. Coordinate work with mason and plumber as required.

3.2 COATINGS

A. Galvanizing:

1. Ferrous metal under this Section for exterior use shall be hot-dip galvanized, including all bolts, nuts, washers, and other related ferrous metal items used therewith.
2. Hot-dip galvanizing process shall comply with ASTM A 123, A 153, A 385, and A 386, as applicable. After galvanizing, processed items shall be straightened to remove all warpage and distortion caused by the process.
3. Furnish to the Resident, a certified statement that galvanizing complies fully with this Specification.

B. Painting:

1. Galvanized steel bollard assemblies will be shop primed and field painted.
   a. Galvanized steel shall be let to weather in accordance with paint manufacturer’s printed instructions, then solvent cleaned or power tool cleaned prior to field priming and painting.
2. Immediately before shop painting, remove all rust, loose mill scale, dirt, weld flux, weld spatter, and other foreign material with wire brushes and/or steel scrapers. Commercial blast clean in accordance with SSPC SP 6; no passivating. Remove all grease and oil by use of solvent recommended by paint manufacturer. Sandpaper exposed surfaces as required to produce smooth, even finishes.
3. Shop apply primer by spray process in strict accordance with manufacturer's printed instructions to uniform thickness(es) recommended by manufacturer. Apply thoroughly and evenly and work well into corners and joints taking care to avoid sags and runs.

4. Do not paint surfaces to be embedded in concrete, or to be welded in the field. After field welds are complete, grind smooth and flush, thoroughly clean and then apply specified primer over all unprimed surfaces in the field by brush or roller.
5. After erection, sand smooth and retouch all portions of the shop coats chipped or damaged during erection, and coat all field welds and connections with primer equivalent to that used for the shop coat.
6. Field apply finish coats by spray process in strict accordance with manufacturer's printed instructions to uniform thickness(es) recommended by manufacturer. Apply thoroughly and evenly and work well into corners and joints taking care to avoid sags and runs.

3.3 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners necessary for securing work of this Section to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors required.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Erect work square, plumb and true, accurately fitted, and with tight joints and intersections. All anchors, inserts and other members to be set in concrete or masonry shall be furnished loose by this trade to be built-into concrete and masonry by those trades. Avoid field cutting or drilling to greatest extent possible.

D. Brace work rigid and secure to surrounding construction. Provide temporary bracing or anchors where required.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

F. Field Welding: Comply with AWS D1.1, D1.3, and D1.6 for procedures of manual metal-arc welding, appearance and quality of welds, and correction methods for defective welds.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

G. Where members other than expansion bolts or inserts are fastened into concrete, set such members in proprietary-type expanding grout manufactured specifically for such purpose. Use grouts strictly in accordance with manufacturer's directions. Form to receive members with galvanized metal sleeves, or other approved method to provide at least 1/2 in. clearance around entire perimeter. At exposed applications, hold expanding grout back 1/2 in. from finish surface and fill voids with Portland cement grout to match color and texture of surrounding concrete surface.

H. Electrolytic Isolation: Coat concealed surfaces of coreten steel, aluminum and galvanized steel that will come into contact with grout, concrete, masonry, wood, or where dissimilar metals are to come into contact with one another, with an application of a heavy coating of bituminous paint on contact surfaces in addition to shop coat specified above. Do not permit the bituminous paint in any way to remain on surfaces to be exposed or to receive sealant.

3.4 INSTALLATION

A. Miscellaneous Bearing and Leveling Plates: Clean concrete and masonry surfaces of bond reducing materials. Roughen surfaces if required to improve bond to surface. Clean bottom surface of leveling plates immediately prior to installation.

1. Set loose leveling and bearing plates on wedges or other adjustable devices. Tighten anchor bolts after plates have been positioned plumb and level. Pack voids between plates and bearing surfaces solidly with specified grout.

B. Miscellaneous Bearing and Leveling Plate Fabrication: Provide miscellaneous loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Fabricate units flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts as required.

C. Miscellaneous Items: Carefully review Drawings for miscellaneous metal items required by various trades but not specifically listed above, such as miscellaneous clip angles, miscellaneous steel bracketing, and other miscellaneous metal items as indicated on Drawings, reasonably implied therefrom, or reasonably necessary for thorough completion of work.

3.5 REPAIRING, CLEANING, AND PROTECTION

A. Repair minor damage to eliminate evidence of repair. Clean exposed surfaces using non-abrasive materials and methods recommended by manufacturer of material or product being cleaned. Remove and replace Work that cannot be successfully cleaned or repaired.

END OF SECTION

SPECIAL PROVISION

SECTION 061063 EXTERIOR

ROUGH CARPENTRY

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. The provisions of the 2020 Standard Specifications, with the following additions shall apply:

1.2 SUMMARY

A. Provide all exterior rough carpentry work, as indicated on the Drawings and as specified herein. Work shall include exterior rough carpentry including but not limited to the following items:

1. Wood deck framing.
2. Stairs and support framing.
3. Rough hardware, inserts, and related metal components.
4. Rough carpentry sleepers, blockings, curbs, cants, edgings, grounds, nailers, and furring.

1.3 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 055001, METAL FABRICATIONS - SITEWORK.
2. Section 061500, WOOD DECKING.

1.4 DEFINITIONS

A. Boards: Lumber of less than 2 inches nominal (38 mm actual) in thickness and 2 inches nominal (38 mm actual) or greater width.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.

C. Timber: Lumber of 5 inches nominal (114 mm actual) or greater in least dimension.

D. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.
4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

1.5 SUBMITTALS

A. Shop Drawings: Submit shop drawings of wood blocking installation and other rough carpentry work. Describe proposed methods of installation and anchorage to structure showing sizes, types, thicknesses, connections of wood blocking and related items, including adjoining work by other trades.

B. Samples: Submit representative samples of all materials for use under this Section.

C. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

D. Fastener Patterns: Full-size templates for fasteners in exposed framing.

E. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Power-driven fasteners.
4. Powder-actuated fasteners.
5. Expansion anchors.
6. Metal framing anchors.

1.6 QUALITY ASSURANCE

A. Provide lumber bearing the grade-trademark of the association under the rules or standards of which it was produced. Grade-trademarks shall conform to the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.

1. Grades specified are the minimum acceptable. Lumber grades shall be determined in accordance with ASTM D 245.
2. Lumber shall bear the grade mark of an American Lumber Standards Committee, Board of Review-approved agency. Lumber shall conform to USDC PS 20.
3. Lumber shall bear a mark of mill identification.

B. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

1. Dimension lumber framing.
2. Timber.
3. Miscellaneous lumber.

1.7 COORDINATION

A. Coordinate the work of this Section with the work of other Sections to assure the steady progress of all the work of the Contract.

1.8 PRODUCT DELIVERY AND STORAGE

A. Stack and store materials above ground under protective coverings, or indoors in such a manner to insure proper drainage, ventilation, and protection. Do not place kiln dried materials in the building until concrete and masonry work have been completed, and are sufficiently dry.

B. Store rough carpentry materials stickered in elevated piles to allow for air circulation below. Wrapped lumber completely, including bottoms, in waterproof tarps. Tie tarps down to protect against wind blow-off. Stored lumber in covered storage trailers during project delays.

C. Deliver and store pedestal system components with labels intact and legible.

1.9 PROJECT CONDITIONS

A. There are no pedestal installation temperature restriction guidelines other than the practical considerations of working in any unsafe condition or inclement weather.

B. Framing must be restrained by perimeter blocking or walls on all sides. Lateral movement is unacceptable and will be rejected.

C. Installation or anticipated installation of additional items on top of the finished wood deck, (such as planters, benches, sculptures, grills, or industrial equipment) must be supported directly by additional pedestals that are in addition to the main deck pedestal system. Special consideration must be also given when installing equipment that vibrates. Total weights must be calculated and dispersed evenly over the number of pedestals needed to carry the expected weight. To avoid point loading, use of planters or architectural features with ‘feet’ is not allowed. Failure to adequately support the additional weight of any such features or items may cause significant damage to the deck or underlying structure.

1.10 WARRANTY

A. The Contractor warrants that his work will remain free from defects of labor and materials in accordance with the General Conditions for this project or a period of three (3) years, whichever is longer.

B. It is the responsibility of the Contractor installing the product listed in this section to coordinate warranty requirements with any related sections or adjacent Work. Notify the Resident immediately of any potential lapses or limitations in warranty coverage.

PART 2 PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For lumber exposed to view in the completed Work, omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. In DOC PS 20, dressed sizes of green lumber are larger than dry lumber.
4. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
5. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Pressure treat boards and dimension lumber with waterborne preservative according to AWPA U1; Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

E. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing members that are less than 18 inches (460 mm) above the ground in unexcavated areas.

2.3 PRESERVATIVE

A. Pressure Type: Preservative: Wolman® E copper azole; provided by Arxada AG Peter Merian-Strasse 80 4052 Basel ✆+41 61 563 80 00; E-mail: info@wolmanizedwood.com • Web: www.wolmanizedwood.com, or approved equal.

1. Lumber shall be pressure treated with copper azole, conforming to AWPA Standard U1. Supply certificate of treatment to Resident.
2. Treatment: In accordance with the requirements of AWPA U1 Standard and in accordance with the following standards for indicated end uses:
   a. Application: UC4A Ground Contact.
3. Under no circumstances shall creosote, copper sulfate, arsenic, or mercuric chloride preservative be used.

2.4 DIMENSION LUMBER

A. Maximum Moisture Content: 15 percent for 2-inch nominal (38-mm actual) thickness or less; 19 percent for more than 2-inch nominal (38-mm actual) thickness.

B. Exposed Lumber: Provide material hand selected for freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot holes, shake, splits, torn grain, and wane.

C. Wood Deck and Stair Framing: Construction or No. 2 grade and any of the following species:

1. Hem-fir (North); NLGA.
2. Southern pine; SPIB.
3. Douglas fir-larch; WCLIB or WWPA.

D. Dimension Lumber Posts: Construction or No. 2 grade and any of the following species:

1. Hem-fir or hem-fir (North); NLGA, WCLIB, or WWPA.
2. Douglas fir-larch, Douglas fir-larch (North), or Douglas fir-south; NLGA, WCLIB, or WWPA.
3. Mixed southern pine; SPIB.

E. Dimension Lumber Decking : Refer to Section 061500, WOOD DECKING.

2.5 BOARDS

A. Maximum Moisture Content: 19 percent.

B. Provide boards hand selected for freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot holes, shake, splits, torn grain, and wane.

2.6 TIMBER

A. Maximum Moisture Content: 19 percent.

B. Dressing: Provide dressed timber (S4S)] unless otherwise indicated.

C. Timber Posts: Southern pine; No. 2, SPIB.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

1. Use stainless steel fasteners unless otherwise indicated.

B. Nails: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Screws: ASME B18.2.1 (ASME B18.2.3.8M).

F. Carbon-Steel Bolts: ASTM A 307 (ASTM F 568M) with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers all hot-dip zinc coated.

G. Stainless-Steel Bolts: ASTM F 593, Alloy Group 1 or 2 (ASTM F 738M, Grade A1 or A4); with ASTM F 594, Alloy Group 1 or 2 (ASTM F 836M, Grade A1 or A4) hex nuts and, where indicated, flat washers.

H. Postinstalled Anchors: Stainless-steel anchors with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488.
1. Stainless-steel bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.8 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cleveland Steel Specialty Co.
2. Harlen Metal Products, Inc.
3. KC Metals Products, Inc.
4. Simpson Strong-Tie Co., Inc.
5. Southeastern Metals Manufacturing Co., Inc.
6. USP Structural Connectors.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G185 (Z550) coating designation.

D. Stainless-Steel Sheet: ASTM A 666, Type 316.

E. Joist Hangers: U-shaped, with 2-inch- (50-mm-) long seat and 1-1/4-inch- (32-mm-) wide nailing flanges at least 85 percent of joist depth.

F. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

G. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch (25 mm) above base and with 2-inch- (50-mm-) minimum side cover, socket 0.062 inch (1.6 mm) thick, and standoff and adjustment plates 0.108 inch (2.8 mm) thick.

H. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.

2.9 MISCELLANEOUS MATERIALS

A. Provide hammer drive anchors and fasteners for securing wood framing, blocking or plywood into masonry of sufficient length to penetrate the receiving member a minimum of 1-1/2 in.

B. Building Felts: Provide 15 lb. asphalt saturated felts, non-perforated, conforming to ASTM D 226, Type I.

PART 3 EXECUTION

3.1 ACCEPTABILITY OF BASE

A. The Resident will examine areas indicated to receive wood deck framing and pedestals, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROUGH CARPENTRY WORK, GENERAL

A. Refer to Drawings to determine the major extent of the rough carpentry work required.

B. The Contractor shall be responsible for structural integrity, connections, and anchorage of rough carpentry work.

C. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned, or too small to fabricate.

D. Set rough carpentry work to required levels and lines, with members plumb and true to line, cut and fitted.

E. Provide wood sleepers, blockings, curbs, cants, edgings, grounds, nailers, and furring where required for screeding or attachment to other work. Coordinate locations with other work to be supported.

F. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces.

G. Provide permanent grounds of dressed, preservative treated, key-bevelled lumber not less than 1-1/2 in. wide, and of thickness required.

H. Unless indicated otherwise, blockings, nailers, etc., of 2 in. nominal thickness or greater shall be bolted to back-up material with 1/2 in. bolts (galvanized at exterior locations and at roofs) located 4 in. from ends and splices, and spaced not greater than 32 in. on center along lengths of the members. Provide nails of sufficient length to penetrate receiving member a minimum of 1-1/2 in.

I. Unless indicated otherwise, secure 2 in. thick or smaller wood framing, nailers, furring, etc., to back-up material by use of appropriate fasteners located 4 in. from ends and spaced not greater than 16 in. on center along lengths of the members. Provide type and length of fastening devices to develop positive and secure anchorage to the back-up material.

J. Butt joints in wood shall be flush to provide smooth, uniform line with no irregularities. Built-up blocking shall have butt joints staggered 4 in. minimum layer to layer. The minimum length of any individual piece of lumber shall be 12 in. Lengths of lumber shall have a minimum of four fasteners.

K. Construct all rough carpentry work plumb, level, and true with tight, close fitting joints, securely attached and braced to surrounding construction. Counterbore for bolt heads, nuts, and washers where required to avoid interference with other materials.

L. Repair all damage caused by nailing, drilling, or powder-driving into concrete or masonry.

3.3 EXAMINATION

A. Examine pedestals and substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.4 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

3.5 INSTALLATION

A. Install as indicated and in accordance with the National Association of Home Builders (NAHB) Advanced Framing Techniques: Optimum Value Engineering.

B. Set exterior rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit exterior rough carpentry to other construction; scribe and cope as needed for accurate fit.

C. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction" unless otherwise indicated.

D. Wood decking: Refer to Section 061500, WOOD DECKING.

E. Install metal framing anchors to comply with manufacturer's written instructions.

F. Do not splice structural members between supports unless otherwise indicated.

G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

H. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

I. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron (SBX) for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

J. Securely attach exterior rough carpentry work to pedestals in accordance with pedestal manufacturer's printed instructions.

K. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads unless otherwise indicated.

L. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

M. Indicate locations of other fasteners, such as wood screws, bolts, and lag screws, on Drawings.

3.5 DECK JOIST FRAMING INSTALLATION

A. General: Install joists with crown edge up and support ends of each member with not less than 1-1/2 inches (38 mm) of bearing on wood or metal, or 3 inches (76 mm) on masonry. Attach floor joists where framed into wood supporting members by using wood ledgers as indicated or, if not indicated, by using metal joist hangers. Do not notch joists.

B. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches (1200 mm).

C. Lap members framing from opposite sides of beams or girders not less than 4 inches (102 mm) or securely tie opposing members together. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist over supports.

D. Unless otherwise required by state building code, provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist at intervals of 96 inches (2438 mm) o.c., between joists.

E. Pedestals and the framing members must be placed as the manufacturer directs in their written instructions.

F. Beneath a pedestal: Construction adhesive is always required when using sections of shims and/or whole shims

3.6 PERIMETER CONTAINMENT

A. Any area of a pedestal framing that is not restrained by a parapet or foundation wall must be 'boxed-in' and contained. The final wood decking may move if all sides are not adequately restrained. Perimeter framing and edging boards located at the outside of the decking perimeter must be installed to provide restraint. No movement should be allowed at the perimeter of the rooftop wood decking system greater than that recommended by pedestal support manufacturer and applicable building code requirements.

3.7 FIELD QUALITY CONTROL

A. Inspect often during installation to assure that grid spacer lines are being maintained in a straight and consistent pattern and that framing members are level and not rocking.

B. Confirm that pedestal height does not exceed the specified height for the pedestal line.

3.8 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

3.9 CLEANING

A. Upon completion of rough carpentry work in any given area, remove all rubbish and debris from the work area and leave in broom clean condition.

END OF SECTION

SPECIAL PROVISION

SECTION 061500

WOOD DECKING

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. The provisions of the 2020 Standard Specifications, with the following additions shall apply:

1.2 SUMMARY

A. Provide all equipment and materials, and do all work necessary to furnish and install the wood decking, as indicated on the Drawings and as specified herein.

1.3 RELATED WORK

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. Section 033001, CAST-IN-PLACE CONCRETE – SITEWORK.
2. Section 055001, METAL FABRICATIONS - SITEWORK; Steel framing and supports.
3. Section 061063, EXTERIOR ROUGH CARPENTRY; Deck framing and support pedestals.

1.4 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

1. American Society for Testing and Materials (ASTM):

A 153	Zinc - Coating (Hot-Dip) on Iron and Steel Hardware
A 325	High Strength Bolts for Structural Steel Joints
D 245	Structural Grades and Related Allowable Properties for Visually Graded Lumber

1.5 SUBMITTALS

A. Submit shop drawings indicating profiles, sizes, connection attachments, and types of fasteners.

B. Product Data: Submit product data to Resident for approval, consisting of complete manufacturers product description and specifications.

C. Certificates: Submit certificates of grading and conformance to specified standards.

D. Wood shall be Forest-Safe™, indicating that the supplier buys only from those mills whose forestry practices have been independently certified to conform with the most rigorous standards as set by the Forest Stewardship Council (FSC).

1. Furnish evidence indicating that source of wood used for deck construction is a plantation farm or other designated source practicing sustain yield concept in forestry, and regulated by governing authorities regarding the growing, harvesting, and replanting of tropical hardwood trees.
   a. All lumber shall come stamped with the mills Forest Stewardship Council (FSC) chain-of-custody certification number, which allows it to be traced back to the originating well-managed forest.

1.6 QUALITY ASSURANCE

A. Materials and workmanship shall conform to governing laws and building code.

B. Lumber shall bear the grade-trademark of the association under the rules or standards of which they were produced. Grade trademarks shall conform to the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.

1. Grades specified are the minimum acceptable. Lumber grades shall be determined in accordance with ASTM D 245.
2. Lumber shall bear the grade mark of an American Lumber Standards Committee, Board of Review-approved agency.
3. Lumber shall bear a mark of mill identification.

C. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

1. Decking lumber.
2. Exposed fascias.
3. Stair boards.

1.7 COORDINATION

A. Work under this section shall be properly coordinated with the work of other sections to assure the steady progress of all the work of the Contract.

1.8 PRODUCT DELIVERY AND STORAGE

A. Materials when delivered to site shall be stacked and stored above the ground under protective coverings or indoors in such manner as to insure proper drainage, ventilation, and protection.

B. Wood decking materials shall be stored on elevated piles to allow for air circulation belowand tipped in one direction to effectively drain moisture. Lumber shall be wrapped completely, including bottoms, in waterproof tarps. Tarps shall be tied down to protect against wind blow-off. Should delays in Project be anticipated, lumber shall be stored in covered storage.

PART 2 PRODUCTS

2.1 FRAMING LUMBER

A. Framing lumber, wood preservatives and hardware shall be as specified in Section 061063, EXTERIOR ROUGH CARPENTRY.

2.2 DECKING LUMBER

A. Lumber shall be thermally modified Ash supplied by one of the following or other approved supplier:

1. Bingaman & Son Lumber, Inc., 1195 Creek Mountain Road P.O. Box 24 Kreamer, PA 17833; (570) 374-1108; Sales: info@bingamanlumber.com.
2. Boyce Highlands Green, Inc., 14 Whitney Road Concord, NH 03301; Tel. (603) 753-1042; fax: 603-753-8065.
3. Tournesol Siteworks; Tel. (800) 542-2282; www.tournesolsiteworks.com/BL.html.

2.3 DECKING HARDWARE

A. Provide Type 316 stainless steel hardware required to complete this work and to attach this work in a secure and rigid manner to work of this and other trades, including all brackets, anchors, anchor bolts, thru bolts, washers, nuts, nails, and other hardware. Assist other trades as necessary in the placement of brackets and anchor bolts in concrete and furnish full instructions regarding locations, sizes, and other requirements of the items in order that they may properly prepare their work to receive same. Rough hardware shall comply in all respects with requirements of the governing laws and codes.

B. Fastening screws for decking shall be “Woodpeckers” Flat Head, 6 Lobe Drive and “Woodpeckers” Finishing, 6-Lobe drive Trim Head, Hand-Drive stainless steel screws manufactured by Swan Secure Products, Inc., 7525 Perryman Court, Baltimore, MD 21226; 800-966-2801 Tel; 410-360-2288; Fax (1-800-847-4714), or approved equal.

1. Screws shall be sized so they penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

C. Fastening Screws for starter boards, end boards, steps & facias shall be one of the following, or approved equal:

1. Fastening screws for decking shall be Swaneze self drilling #7 trim head stainless steel screws manufactured by Swan Secure Products, Inc., 960 Turnpike Street; Canton, MA 02021; 877-792-6732 Tel. 781-828-1033 Fax, or approved equal.

2. Fastening screws for decking shall be HEADCOTE® color coated trim screws, manufactured by Starborn Industries, Inc., Avenel, NJ 07001; Email: info@starbornindustries.com; Phone: 1-800-596-7747; or approved equal.
   a. Headcote® #8 x 2-1/2"color coated trim screws, including one Smart-Bit® pre-drilling and countersinking tool and one #2 square drive insert bit.
   b. Type 305 Stainless Steel with countersinking nibs, square drive recess and type 17 notched point
   c. Highly durable epoxy based finish
   d. Colors shall match decking material
3. Screws shall be sized so they penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

2.4 HIDDEN FASTENERS

A. Tiger Claw TC-4, stainless steel fasteners with black oxide coating, manufactured by Tiger Claw Inc., 400 Middle Street, Suite J, Bristol, CT 06010 -8405; Tel. 800-92-TIGER; (800/928-4437) toll free, or approved equal. Fasteners shall be specifically designed for use with iron wood decking materials up to 4 in. wide. Fasteners shall include black oxide stainless steel screws.

B. The Ipe Clip, manufactured by The Ipe Clip® Fastener Company Inc., 2111 58th Avenue East. Bradenton, Florida 34203; Toll Free: 1-866-427-2547; Local: (941) 896-9851; Fax: (941) 896-9858; Email: info@ipeclip.com, or approved equal. Fasteners shall be specifically designed for use with iron wood decking materials up to 6 in. wide. Fasteners shall include black oxide stainless steel screws.

2.5 SEALER

A. Sealer shall be a Brazilian Rosewood Oil penetrating sealer manufactured specifically for hardwood decking, with UV inhibitors, similar to Penofin-Hardwood Formula manufactured by Penofin, P.O. Box 1569, Ukiah, CA 95482; Phone or Fax: Tel: 707-462-3023; Toll Free: 800-PENOFIN (U.S.A.); Fax: 707-462-6139, or approved equal.

1. Especially formulated to penetrate dense hardwoods
2. Added ultraviolet protection
3. Transparent natural tone permitting character of wood to be seen
4. Advanced mildew protection
5. Shall not be a surface film that will crack, bubble, or peel

PART 3 EXECUTION

3.1 WOOD DECKING

A. Wood decking work required shall include all work, regardless of whether or not each and every item is specifically called for. Refer to Drawings to determine the major extent of the wood decking work required.

B. The Contractor shall be responsible for structural integrity, connections, and anchorage of wood decking.

C. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, or not adequately seasoned. Structural members shall be full-length without splices.

3.2 FASTENING OF WOOD MEMBERS

A. Wood framing and supports shall be located as indicated on the Drawings. Refer to Section 061063, EXTERIOR ROUGH CARPENTRY.

B. Wood decking work shall be secured to framing and spaced as indicated on the Drawings, minimum of two at each support. Screw heads shall be shall be predrilled, screwed at 15 degree angle and pegged in accordance with decking suppliers' printed instructions.

3.3 CLEANING

A. Upon completion of wood decking work in any given area, remove all rubbish and debris from the work area and leave in clean condition.

END OF SECTION

SPECIAL PROVISION
SECTION 815
CAST-IN-PLACE CONCRETE SEATWALL

The provisions of the 2020 Standard Specifications with the following additions shall apply:

815.01 Description

This work consists of furnishing and installing custom wood seating on a monolithic concrete base, as indicated and detailed on the Drawings, and as specified herein.

815.02 Materials

Materials and workmanship shall conform to governing laws and building codes.

Concrete shall meet the requirements of MaineDOT Standard Specifications, Section 502 Structural Concrete.

Reinforcing Steel shall meet the requirements of MaineDOT Standard Specifications, Section 503 Reinforcing Steel.

Stainless Steel shall meet the requirements of MaineDOT Standard Specifications, Division 700, Section 711.12 Stainless Steel.

Lumber shall bear the grade-trademark of the association under the rules or standards of which they were produced. Grade trademarks shall conform to the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.

Grades specified are the minimum acceptable. Lumber grades shall be determined in accordance with ASTM D 245.

Lumber shall bear the grade mark of an American Lumber Standards Committee, Board of Review-approved agency and shall bear a mark of mill identification. Lumber shall conform to USDC PS 20.

815.021 Lumber

New Lumber for Wood Seat Cap at Concrete Retaining Wall shall be thermally modified Ash supplied by one of the following or an approved equal:

- Bingaman & Son Lumber, Inc., 1195 Creek Mountain Road P.O. Box 24 Kreamer, PA 17833; (570) 374-1108; United States Sales: info@bingamanlumber.com.
- Boyce Highlands Green, Inc., 14 Whitney Road Concord, NH 03301; Tel. 603-753-1042; fax: 603-753-8065.
- Tournesol Siteworks; Tel. 1-800-542-2282; www.tournesolsiteworks.com/BL.html

815.022 Hardware

The Contractor shall provide type 316 stainless steel hardware, capable of creating a secure and rigid attachment, including all brackets, anchors, anchor bolts, thru bolts, washers, nuts, nails, and other hardware. Rough hardware shall comply in all respects with requirements of the governing laws and codes.

Fastening screws for decking shall be Swaneze self-drilling #7 trim head stainless steel screws manufactured by Swan Secure Products, Inc., 960 Turnpike Street; Canton, MA 02021; 877-792-6732 Tel. 781-828-1033 Fax, or an approved equal.

815.023 Sealer

Sealer shall be a Brazilian Rosewood Oil penetrating sealer manufactured specifically for hardwood decking, with UV inhibitors. Sealer shall be especially formulated to penetrate dense hardwoods, have added ultraviolet protection, and advanced mildew protection. Sealer shall have a transparent natural tone permitting character of wood to be seen. Sealer shall not be a surface film that will crack, bubble, or peel.

Acceptable products include Penofin-Hardwood Formula manufactured by Penofin, P.O. Box 1569, Ukiah, CA 95482; Phone or Fax: Tel: 707-462-3023; Toll Free: 800-PENOFIN (U.S.A.); Fax: 707-462-6139, or approved equal.

815.03 Submittals

Prepare shop drawings indicating profiles, sizes, connection attachments, and types of fasteners in accordance with Section 105.7 – Working Drawings.

Submit product data consisting of complete manufacturers product description and specifications. Submit certificates of grading, and conformance to specified standards.

815.04 Delivery and Storage

Materials when delivered to site shall be stacked and stored above the ground under protective coverings or indoors in such manner as to ensure proper drainage, ventilation, and protection.

Wood materials shall be stored on elevated piles to allow for air circulation below and tipped in one direction to effectively drain moisture. Lumber shall be wrapped completely, including bottoms, in waterproof tarps. Tarps shall be tied down to protect against wind blow-off. Should delays in Project be anticipated, lumber shall be stored in covered storage.

815.05 Monolithic Seat Base

Excavation for the structure and for bedding material shall be in conformance with MaineDOT Standard Specifications, Section 206 Structural Excavation.

The Contractor shall furnish and place Portland Cement Concrete for the Monolithic Seat Base in accordance with MaineDOT Standards Specifications and in conformity with the lines, grades, and dimensions shown on the Plans.

The Contractor shall furnish and place reinforcing steel bars in accordance with MaineDOT Standards Specifications, and other applicable Contract Documents.

815.06 Execution

The Contractor shall be responsible for structural integrity, connections, and anchorage of wood seating. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, or not adequately seasoned. Structural members shall be full-length without splices.

Wood seating shall be secured to the existing concrete base as indicated on the Drawings. Wood seating shall be left to weather to a natural silver/gray.

Upon completion of wood seating work in any given area, remove all rubbish and debris from the work area and leave in clean condition.

815.09 Method of Measurement

Cast-in-Place Concrete Seatwalls will be measured for payment by the linear foot, at grade along the face of the monolithic seat base, installed and accepted in place.

815.10 Basis of Payment

The quantity of Cast-in-Place Concrete Seatwalls will be paid for by the contact unit price per linear foot, complete and accepted in place. Such payment will be full compensation for excavation, stone fill, concrete sonotubes, construction of the concrete wall including reinforcing steel, backfilling, furnishing, fabricating and installing the stainless steel mounting plates, furnishing the lumber and all required hardware components for installation, the finish sealer, and all labor, tools, hardware and other incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
815.40	Cast-in-Place or Precast Concrete Seatwalls	Linear Foot

SPECIAL PROVISION
SECTION 815
BUILDINGS
(Terraced Landscape)

The provisions of the 2020 Standard Specifications with the following additions shall apply:

815.01 Description

The work shall consist of designing, furnishing materials for, and constructing a Terraced Landscape area in accordance with these specifications, plans, other contract documents, or as directed by the Resident.

815.02 Design Requirements and Submittals

The Contractor shall submit for review detailed plans prepared by a licensed Professional Engineer, who must be licensed in accordance with the laws of the State of Maine. The design shall address all portions of the Terraced Landscape as shown in the Contract Drawings, and shall meet all applicable local codes. All submittals shall be in accordance with Section 105.7 Working Drawings.

In addition to design documents, the Contractor shall submit manufacturers' specifications, product data and installation instructions for all items furnished. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the specifications unless the Contractor has specifically informed the Department in writing of such deviation at the time of submission and the Department has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions. No portion of the work shall be commenced until the Department has approved the submittal.

815.03 Quality and Standards

Materials and manufactured products incorporated into the work shall be new unless otherwise specified, free from defect, and in conformity with the Contract. When material is fabricated or treated with another material or where any combination of materials is assembled to form a finished product, any or all of which are covered by specifications, the Department may reject the finished product if any of the components do not comply with the specifications. The Department may reject materials not conforming to the Specifications at any time, and the Contractor shall remove them immediately from the project site unless otherwise instructed by the Department. The Contractor shall not store, or use rejected materials on any Department project.

If there is no applicable standard set forth in this Contract for a particular type of Work, then the Contractor shall perform that Work in accordance with industry standards prevailing at the time of bid. If the Department determines that Work is non-conforming, the Contractor shall remove, replace, or otherwise correct all unacceptable work as directed by the Department at the expense of the Contractor, without cost or liability to the Department.

815.04 Variations from Materials Specified

Whenever and wherever items have been identified by describing a proprietary product, such identification is intended to be descriptive, but not restrictive, and is used to indicate the quality and characteristics of products that are satisfactory. Bids shall be considered as offering the item specified in the Invitation for Bid. The Department will consider all alternates submitted by the Contractor, but is not bound to accept any which, in its opinion, is not in the Department's best interest and are determined by the Department to be of equal value in all material respects to the proprietary items specified. The evaluation of and determination as to equality of the product offered shall be the responsibility of the Department and will be based on information furnished by the Contractor, as well as information reasonably available to the purchasing activity.

815.05 Environmental Requirements and Waste Materials

All waste materials shall be removed and disposed of in accordance with all federal, state, and local laws.

All materials removed from the site shall be the property of the Contractor. Sale of these materials on site, and removal by people other than the Contractor or his personnel, shall be at risk of the Contractor. Once the Contract is signed, responsibility for the safety of the public within the confines of the project shall be the responsibility of the Contractor. The Contractor shall be responsible for all materials dropped from his trucks distant from the project. The Contractor shall make his own arrangement for disposal of materials taken from the site, and there will be no burning of materials on or adjacent to the site.

815.06 Final Cleaning

The Contractor shall clean each surface to a condition expected in an average public outdoor building cleaning and maintenance program. The Contractor shall clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces.

The Contractor shall touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

815.07 Method of Measurement

Terraced Landscaping will be measured as one Lump Sum.

815.08 Basis of Payment

The accepted Terraced Landscape will be paid at the Contract Lump Sum price, which shall be full compensation for design, supplying materials, and construction of the Terraced Landscaped area as described in the Contract Drawings and all applicable Standard Specifications and Special Provisions.

Payment will be made under:

Pay Item		Pay Unit
815.41	Terraced Landscape	Lump Sum

SPECIAL PROVISION
SECTION 827
ASBESTOS CEMENT PIPE REMOVAL AND DISPOSAL

The provisions of the 2020 Standard Specifications with the following additions shall apply:

827.01 Description

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes

1. Removal, management, and offsite disposal of asbestos-containing Pipe (ACP) designated for removal as asbestos-containing waste material (ACWM).

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 100 General Conditions.

1.03 REFERENCES

A. Work shall be performed in accordance with applicable Federal, State, and local regulations, standards and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement. The list of reference standards provided below is not intended to be all inclusive, and may not cite each regulation prevailing over the work. The latest version of the document listed shall govern the work performed. Where more stringent requirements are specified, adhere to the more stringent requirements.

1. American National Standard Institute

   a. Practices for Respiratory Protection, Z88.2

   b. Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems, Z9.2

   c. Commodity Specification for Air, Z86.1.

2. Environmental Protection Agency

   a. Asbestos Hazard Emergency Response Act (AHERA), 40 CFR 763 Subpart E, Asbestos-Containing Materials in Schools.

   b. National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR 61.

3. National Institute for Occupational Safety and Health (NIOSH)

    a. "Asbestos Fibers by Phase Contrast Microscopy (PCM)," NIOSH Method 7400.

    b. "Respiratory Protection: A Guide for the Employee"

4. Occupational Safety and Health Administration (OSHA)

    a. Asbestos General Industry Standard, 29 CFR 1910.1001.

    b. Asbestos Construction Standard, 29 CFR 1926.1101.

    c. Occupational Safety and Health Standards, 29 CFR 1910.

    d. Safety and Health Regulations for Construction, 29 CFR 1926.

5. U.S. Department of Transportation (USDOT)

    a. Transportation Standard, 49 CFR 171-173

6. Maine Department of Environmental Protection

    a. Title 38, Chapter 12-A: Asbestos §1271 - §1284

    b. Chapter 425 - Asbestos Management Regulations (Word), effective April 3, 2011

7. Client-specific or local municipality-specific codes, ordinances.

B. Definitions

1. Abatement: Any activity which has as its principal purpose the removal, enclosure or encapsulation of ACM, including, but not limited to activity in connection with the renovation, repair or demolition of a facility.

2. ACM: Asbestos-containing material.

3. ACP: Asbestos-containing pipe.

4. ACWM: Asbestos-containing waste material

5. Adequately Wet: Sufficiently mixed or penetrated with liquid to prevent the release of particulate. If visible emissions are observed coming from any ACM, then that material has not been adequately wetted.

6. Air Monitoring: The process of measuring the fiber content of a known volume of air collected over a specified period of time.

7. Air Intake: Any opening through which air is admitted to an air-handling system in a building.

8. Amended Water: Water to which a surfactant has been added.

9. ANSI: American National Standards Institute

10. Asbestos: Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered.

11. Authorized Visitor: Any visitor authorized by the Owner or a representative of a regulatory agency or other agency having jurisdiction over the project.

12. AWSR: Asbestos Waste Shipment Record - the shipping document used to track and substantiate the disposition of ACWM.

13. Clean Room: An uncontaminated room that is a part of the worker decontamination unit and in which worker's street clothes and protective equipment can be stored.

14. Competent Person: In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and of selecting the appropriate control strategy to minimize asbestos exposure, and who has the authority to take prompt corrective measures to eliminate asbestos hazards. In addition, for Class I and II work, one who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for asbestos abatement supervisor.

15. Contractor: Refers to contractor and/or subcontractors responsible for performance of the work of this Section.

16. Critical Barrier: Airtight coverings or enclosures at openings from the abatement work area to non-abatement areas, including but not limited to doors, windows, vents, grilles, light fixtures, electrical outlets, and coverings over non-movable objects or components located within a regulated work area.

17. Decontamination Area/Unit: An enclosed area adjacent to and connected to the regulated asbestos abatement area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

18. Encapsulation: The application of a coating or liquid sealant to ACM to reduce the tendency of the material to release fibers.

19. Enclosure: The covering or wrapping of friable ACM in, under, or behind air-tight barriers.

20. HEPA: High-Efficiency Particulate Air.

21. MEDEP: Maine Department of Environmental Protection

22. NIOSH: National Institute of Occupational Safety and Health

23. OSHA: Occupational Safety and Health Administration

24. Owner: **Portland Water District**

25. Owner's Representative: The Architect, Engineer, Construction Management Firm, or Industrial Hygiene Consultant.

26. PPE: personal protective equipment

27. Regulated Area: An established area where airborne concentration of asbestos fibers exceeds or can reasonably be expected to exceed the permissible exposure limit.

28. SDS: Safety Data Sheet

29. Site: **Roux Site and Sherwood Street**

30. TSI: Thermal system insulation

31. LF: Linear Feet

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, sequencing, and scheduling: per Division 100 General Conditions.

B. General provisions of the Contract, including Division 100 General Conditions, apply to this Section.

C. Examine all Drawings and all other sections of the Specifications for requirements affecting the work of this Section.

D. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of the Contract and as specified herein.

1.05 SUBMITTALS

A. Submit in accordance with Division 100 General Conditions.

B. Pre-construction submittals:

1. Certificates of insurance

2. Copies of permits for each disposal site or landfill proposed for ACWM disposal, and copies of waste transporter permits.

3. Health and Safety Plan developed specific to the work activities, including a Respiratory Protection Program compliant with 29 CFR 1910.134 and an Emergency Action Plan compliant with 29 CFR 1926.35.

4. Contractor Work Plan developed specific to the work activities, including:

    a. Identification of each work area, and proposed means and methods of abatement for each identified ACP included in the abatement scope of work. Provide drawing(s) indicating the proposed phasing of work, the proposed locations of regulated work barriers, locations of personnel decontamination units, locations of waste load out units, and routes that will be used to transport ACWM from each regulated area to the designated waste storage area.

    b. Product data, SDSs, and/or manufacturer's instructions for equipment and materials that will be used on the project, including but not limited to polyethylene sheeting, mastic removal agents, tape, air filtration devices, decontamination equipment, water filtration equipment, vacuums, and amended water solutions.

    c. A statement certifying compliance with OSHA requirements including but not limited to medical surveillance, training, record keeping, and employee exposure monitoring.

    d. Identification of waste transporter(s) and waste disposal facility(ies) for each waste stream.

C. Construction submittals:

1. Personal air sampling results shall be submitted to the Owner on the day that the data is generated.

2. Incident reports shall be submitted to the Owner on the day of the incident.

3. Copies of the AWSRs associated with ACWM generated shall be provided to the Owner on the day the waste leaves the Site.

D. Closeout submittals:

1. Waste shipment records signed by the waste generator, transporter and landfill operator demonstrating that the ACM removed from the project has been packaged, removed and disposed of properly. Delivery of completed waste shipment records to the Owner shall be within 35 days of the waste leaving the site in accordance with the EPA NESHAP regulation.

2. Provide the owner with copies of on-site job logs, notifications, permits, accident reports, personal air monitoring results, lien waivers.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. The Contractor shall be certified by the MEDEP as an Asbestos Contractor.

2. Contractor personnel involved with asbestos abatement work shall have the following minimum qualifications:

   a. Current license by the MEDEP as an asbestos supervisor or asbestos worker.

   b. Medical examination within the past year in accordance with OSHA 1926.1101 with a physician's written opinion that the worker has no condition that would preclude working with asbestos or wearing a respirator.

3. The Contractor shall employ a Competent Person to oversee the work of this Section. The Competent Person qualifications shall be as follows: four (4) years of abatement experience of which two (2) years were as the Competent Person; meets the OSHA definition of a Competent Person; has been the Competent Person on two (2) projects of similar size and scope as this project; has completed all training requirements / accreditation(s) and refreshers; has all required OSHA documentation related to medical and respiratory protection, and is licensed as an asbestos supervisor by the MEDEP

4. There shall be a sufficient number of trained and qualified workers, foremen, superintendents, and licensed tradespersons to accomplish the work within the required schedule, including a sufficient number of qualified and licensed electricians, plumbers, HVAC technicians, and pipe fitters having appropriate asbestos training to perform the work and to respond to emergencies that may occur within regulated work areas.

B. The Contractor is responsible for providing and maintaining training, accreditation, medical exams, medical records, and personal protective equipment for persons performing abatement work as required by applicable Federal, State and local regulations.

C. The Contractor shall assume full responsibility and liability for the compliance with all applicable federal, state, and local regulations pertaining to work practices, transport and disposal of asbestos contaminated materials, and protection of workers and visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the Owner and Owner's Representatives harmless for Contractor's failure to comply with any applicable work, transport, disposal, safety, health or other regulation, policy statement, recommendation, or best management practice on the part of itself, its employees, or its subcontractors.

D. Unless noted otherwise, the Contractor shall file notifications and obtain all permits required to complete the work, including but not limited to abatement permits, utility work permits, discharge permits, or other applicable permits required by local, state, or federal government regulations. The costs associated with required notifications and permit fees shall be paid for by the Contractor.

E. If warranted The Owner shall submit the alternative work practice plan to MEDEP and shall pay any associated submittal fee.

F. It is the responsibility of the Contractor to visit the Site prior to bidding in order to determine the locations and quantities of materials to be removed, as well as staging and protection requirements or other factors which may affect their bid. The quantities and locations of the ACP identified in this Section are estimates and shall not be relied upon as the basis of the Contractor's bid. Contractor shall review and confirm all quantities and field conditions related to the work of this Section, including locations, surface area, thickness, cross-sectional area, component layers, or substrate conditions. Neither the Owner nor any Owner's representative shall be responsible for errors or omissions and/or charges for extra work arising from the Contractor's failure to become familiar with the existing conditions of the Site.

G. The Owner has the authority to stop the work at any time it determines either personally or through its representatives that conditions are not compliant with the specifications and/or applicable regulations. The stoppage of work shall continue until corrective steps have been taken to the Owner's satisfaction. Standby time required to resolve violations shall be at the Contractor's expense, and any fines, etc., for hazardous conditions or non-compliance will be at the Contractor's expense and will not be grounds for change orders or time extension.

H. Work shall be performed in a manner that protects the health and safety of the Contractor's employees and employees of other contractors and vendors at the site, Owner's representatives and employees, the general public, and the environment.

I. The Contractor is responsible for employee exposure monitoring for airborne asbestos fibers and other contaminants in compliance with OSHA regulations. The Owner's Representative may also conduct exposure monitoring on Contractor personnel and area air monitoring at locations inside and outside of the work area.

J. Contractor is responsible for meeting OSHA requirements for contractor employees, including but not limited to, monitoring requirements, safety compliance training and record keeping. Employee exposure monitoring results from the previous day shall be posted each day, and copies of the results forwarded to the Owner's Representative.

K. The Contractor shall maintain SDSs for each products used onsite.

L. Pre-construction testing (e.g., Contractor support for destructive investigation, if needed).

M. Mockups (e.g., The Contractor shall provide support to the Owner as requested for pre-construction testing or mockups involving disturbance of identified ACP).

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 100 General Conditions.

B. Deliver materials to Site in original unopened containers.

C. Store and handle materials in compliance with manufacturer's recommendations.

1.08 SITE CONDITIONS

A. Asbestos Transite Pipe has been identified at the Site. The types, locations, and approximate quantities ACP are summarized below. The Contractor shall coordinate with the Owner and general contractor to determine best practices for removal.

B. If the Contractor encounters any previously unidentified and/or untested material that is suspected to contain asbestos, the Contractor shall stop work in the affected area and notify the Owner who will arrange for assessment of the suspect material. Contractor shall not cause damage to or disturbance of the material until assessment has been completed. If the material in question contains asbestos, the Contractor shall remove and dispose of the material in accordance with this Section. The contractor shall not sample suspect ACM nor contract with others to perform such services. All sampling of materials for asbestos determination shall be by the Owner or by the Owner's representative.

1. Asbestos Table

Location	Material Description	Analytical Results	Approximate Quantity[1]
Exterior Along Property Line / Street	Asbestos Transit Pipe	Presumed	280 LF

Notes:

1. Quantities of observed ACP are estimated based on observations made from site documentation, as indicated on the Drawings.

PART 2 – PRODUCTS

2.01 PROTECTIVE CLOTHING

A. Proper PPE may vary depending on the job task, but may include disposable gloves, disposable rubber boots, steel-toe boots, disposable protective coveralls (Tyvek® or equivalent), respirators, hard hats, hearing protection, and/or eye protection. Protective coveralls designed and specified by the manufacturer for worker protection in hazardous environments are required when working within asbestos-regulated areas.

B. Provide sufficient quantities of protective clothing to ensure that enough complete disposable outfits are available for each individual. Disposable protective coveralls shall not be reused.

C. Authorized visitors shall be provided with suitable protective clothing, hard hat, eye protection, and footwear whenever they enter the work area. No unauthorized visitors will be allowed to enter the work area.

2.02 RESPIRATORY PROTECTION

A. Establish and maintain a respiratory protection program which shall include the requirements specified in 29 CFR 1910.134.

B. Respirators shall be individually fit-tested to personnel under the direction of an industrial hygienist on a yearly basis. Fit-tested respirators shall be permanently marked to identify the individual fitted, and use shall be limited to that individual. The Contractor shall maintain fit-test records and documentation of participation in a respirator training program for each employee using a respirator.

C. Provide and make available a sufficient quantity of respirator filters so that filter changes can be made at a frequency at least as often as recommended by the manufacturer's specifications.

D. Provide a storage area where respirators will be kept in a clean environment.

2.03 MATERIALS

A. Deliver all materials in original packages, containers or bundles bearing the name of the manufacturer.

B. Damaged, deteriorating, contaminated products or equipment shall not be used.

C. Polyethylene sheeting shall be at least 6-mil thickness for floor coverings and at least 4 mil thick for covering walls and ceilings. Polyethylene sheeting shall be fire retardant and shall meet all applicable standards for temporary construction barriers.

D. All lumber shall be fire retardant.

E. Duct tape or other waterproof tape, furring strips, spray glue, staples, nails, screws, or other materials shall be available to secure polyethylene sheeting.

F. Disposal bags shall be of 6-mil polyethylene. Disposal bags and other disposal containers shall have labels required by EPA, OSHA, and DOT regulations directly printed onto the container.

G. Asbestos warning signs that are posted at all approaches and/or entrances to work areas shall conform to OSHA 29 CFR 1926.1101.

H. All fire extinguishers required for the project shall be of appropriate type, properly pressurized and in good working condition.

I. Adequately stocked first aid kits shall be on-site.

J. Surfactant (wetting agent) shall be prepared as specified by the manufacturer.

2.04 TOOLS AND EQUIPMENT

A. The Contractor shall have a sufficient quantity of scaffolding, ladders, platforms, fall protection systems and equipment, hand tools, and materials to conduct the abatement project in an efficient and workmanlike manner.

B. All electrical cords and connections within all work areas shall be protected with ground-fault circuit interrupters (GFCI) and shall meet all applicable codes for use in wet environments.

C. Transportation equipment shall be suitable for loading, temporary storage, transport, and unloading of ACWM without exposure to persons or property. The equipment shall be secured when not in use and access restricted to authorized personnel.

D. Vacuums shall be equipped with HEPA filtration systems, 99.97% efficient to 0.3 microns particulate size and shall comply with ANSI Z9.2 standards. Deliver all vacuums to the site with clean waste containers and new HEPA filters installed. Vacuum wands, brushes, hoses, shrouds, and other accessories shall be delivered to the site new or if previously used shall be delivered to the site in airtight bags.

E. The Contractor shall have sufficient equipment to mix and spray wetting agents and encapsulants.

F. Provide water filtration devices equipped with 5-micron filters for personnel decontamination and waste loadout units. All water filtration devices shall be leak-tested prior to use. All filters and trapped sediments shall be handled, packaged and disposed of as asbestos-containing waste material.

PART 3 – EXECUTION

3.01 EXAMINATION

A. The Contractor shall verify existing conditions to understand the nature and extent of work to be performed before commencing work. The Contractor shall submit any questions regarding the extent and character of the work in the manner and within the time period established for receipt of such questions.

3.02 PREPARATION

A. Regulated Work Areas (Non-Containment Abatement)

B. Establish regulated work areas as necessary to complete the work of this Section. Security procedures shall be implemented to ensure that only authorized persons are allowed in the regulated areas.

C. Establish a regulated work area clearly demarcated with red Asbestos Danger Tape. The work area shall have only one designated entrance and exit, which must connect directly to the decontamination facilities.

D. Post Asbestos Danger Signs on all sides of the demarcated area at intervals sufficient to ensure visibility from any approach. Signs shall comply with OSHA and EPA requirements.

E. Ensure the regulated area is large enough to accommodate all work activities while maintaining safe distances from unprotected personnel and adjacent occupied spaces.

F. Access to the regulated area shall be restricted to trained and authorized personnel only.

G. Maintain the integrity of the regulated area throughout the duration of the abatement activity. If the demarcation is breached or compromised, work shall stop until the area is re-secured.

H. Provide adequate barriers or signage to prevent accidental entry by unauthorized individuals.

I. Ensure that all waste and debris generated within the regulated area remains inside the demarcated zone until properly containerized and removed through approved procedures.

J. Remove moveable objects from regulated work areas. Non-moveable objects shall be pre-cleaned by wet wiping and/or HEPA-vacuuming and then protected from contamination by covering the object airtight with two layers of 6-mil thickness polyethylene sheeting secured with duct tape or other suitable airtight sealant. Contractor shall wipe down, HEPA-vacuum or otherwise decontaminate all movable items prior to removing those items from work area.

K. Make safe energized electrical circuits and conductors located within the work areas. Lockout/tagout energized electrical circuits and conductors located within the work areas prior to the start of abatement. Electrical work shall be performed by qualified and licensed electricians in accordance with all applicable regulations, codes, policies, and best management practices.

L. Coordinate life safety requirements (heat detectors, pull boxes, strobes, sprinklers, etc.) with the Owner prior to establishing containments throughout the work area.

M. Install temporary lighting, water, electrical, and other services as required to perform the work. Coordinate temporary electrical and plumbing connections with the Owner. Provide and properly connect Ground Fault Circuit Interrupters (GFCI) for all temporary electrical service. Electrical or plumbing work shall be performed by licensed and qualified electricians or plumbers. Temporary services shall conform with applicable codes and OSHA requirements.

N. Provide temporary connections, electrical cords, hoses, water heaters, and other equipment as required for abatement and air clearance sampling needs.

O. Work area isolation for Asbestos Abatement with Containment

1. If applicable, negative pressure containments for abatement areas located outdoors shall be constructed of reinforced polyethylene sheeting, hard barriers or other methods subject to approval by the Owner. Containment barriers for exterior work areas shall be designed, constructed and maintained to withstand typical weather conditions including heavy rains, snow loads, and high winds.

2. Air filtration devices:

a. Provide a suitable number of air filtration devices in the full containment work areas and other types of negative pressure enclosures to maintain a negative pressure in the work area relative to the adjacent non-work areas, and to obtain the minimum number of air exchanges (one per 15 minutes) within each work area. Fans for each unit should be sized to draw a desired airflow through the filters in the unit at a specified pressure drop. Replace HEPA filters containing holes, tears, or other visible indications of damage.

b. Provide negative air filtration system in the work area to maintain a minimum negative pressure of 0.02 inches water column as indicated by an automatic recording air pressure manometer in each work area.

c. Air filtration devices shall be exhausted to the outside of the building through perimeter windows or other openings as appropriate. The discharge of air filtration devices shall not be directed at sidewalks or other areas open to the public.

d. Isolate heating and ventilation air intakes within regulated work areas by installation of polyethylene barriers at least 6-mil in thickness to form an airtight seal over the intakes. Coordinate with Owner and general contractor prior to covering air intakes.

P. Decontamination facilities:

1. Provide each abatement area with a three-stage personnel decontamination facility (PDF) consisting of a Clean Room, Shower Room, and Equipment Room, constructed with airtight barriers with a minimum of two layers of 6-mil fire retardant polyethylene sheeting. The facility shall include:

   a. Clean Room: Storage for personal protective equipment (PPE) and clean clothing.

   b. Shower Room: Operable shower with hot and cold water, connected to a filtration system capable of capturing asbestos fibers before discharge.

   c. Equipment Room: Area for removal and storage of contaminated clothing and tools.

   d. All wastewater from showers shall be filtered through a system meeting local and federal discharge requirements. The unit shall be maintained in a clean and operable condition throughout abatement activities.

2. All authorized persons entering an asbestos abatement work area shall follow the entry and exit procedures required by applicable regulations and these specifications.

3.03 ASBESTOS REMOVAL

A. The Contractor shall designate a person to be stationed outside the regulated work area at all times while persons are inside the regulated work area conducting abatement operations. This person shall be in direct voice or radio contact with the inside work area supervisor or foreman.

B. Spray all ACP to be removed with water containing a wetting agent. Saturate the ACM sufficiently throughout the removal process so that there will be no visible emissions from dry asbestos at any time.

C. Wetted ACPs shall be removed by hand or by using only hand tools. Power tools shall only be used if the working point of the tool is shrouded, with the shroud connected to a properly functioning HEPA-filtered vacuum.

D. The asbestos-cement pipe shall be exposed with minimal disturbance.

E. Mechanical excavation shall not be used within six inches of the asbestos-cement pipe

F. The soil within six inches of the asbestos-cement pipe shall be uncovered by hand or with a shovel If the assessment shows that the asbestos-cement pipe is intact and not deteriorated:

G. Place 6 mil (0.006 inch) thick polyethylene sheeting under the asbestos cement pipe to prevent soil contamination. Adequately wet the ACP with amended water using surfactant or liquid soap before and during removal to avoid creating airborne dust. Separate the asbestos cement pipe at the nearest coupling (bell or compression fitting). Slide the asbestos-cement pipe apart at the joints (no saw cutting) or use other methods that do not cause the ACP to break, become friable ACM or otherwise create the potential to release asbestos fibers. Containerizing the wet asbestos-cement pipe and other debris from the abatement may be done in the trench or adjacent to the trench If the trench is filled with water, the placement of polyethylene sheeting is not required.

H. If the asbestos-cement pipe is deteriorated or is not intact, or when the use of mechanical breakage with saws, snap or blade cutting, and/or tapping is necessary Place 6 mil (0.006 inch) thick polyethylene sheeting under the asbestos-cement pipe to prevent soil contamination.

I. Adequately wet asbestos-cement pipe with amended water were cutting or breaking will occur.

J. Saw cutting of asbestos-cement pipe shall only be conducted with a HEPA-shrouded vacuum attachment or wet cutting equipment, unless it is conducted within a small enclosure that isolates the area in which the saw cutting is being conducted to prevent the release of asbestos fibers to ambient air. All cutting of ACP must be approved by the Owners IH representative.

K. Wrap wet asbestos cement pipe in two layers of 6 mil polyethylene sheeting, seal with duct tape and label (This may be done either in the trench or adjacent to the trench).

L. For activities that disturb friable ACP, no visible emissions shall be discharged to the outside air during the collection, processing, packaging or transporting of any ACP or ACWM

M. Immediately following removal, the materials shall be packed into properly labeled dumpsters. Each dumpster must have the following;

1. Each individual ACP wrap/bundle will have its own Asbestos and generator label affixed to it.

2. Two 6 mil thickness (minimum) asbestos bladder bags/lining.

3. The bladder Bags/linings will be sealed with spray glue and sealant tape.

4. The seam of the bladder bag/lining with have an asbestos label and generator label affixed.

5. State and Federal placards/labels will be affixed to the dumpster before being transported.

6. Any disposal bags or drums used shall be double-bagged with each bag closed separately with a "goose neck" seal. Large components may be wrapped airtight in 2 layers of 6-mil thickness polyethylene sheeting.

7. All bags, polyethylene sheeting, and drums shall be labeled in accordance with federal, state, and local requirements.

N. The Contractor shall not allow the removed material to accumulate prior to being containerized. In no instances shall the Contractor fail to containerize all materials including debris prior to the shift breaking for lunch, or at the end or change of a shift. Prior to beginning removal in a new area, all previously removed materials shall be containerized.

O. Decontaminate all surfaces and reusable equipment within the work area using wet wiping and/or HEPA vacuuming methods to remove dust and debris. Completely clean/decontaminate the affected surfaces and reusable equipment using scour pads, nylon brushes, wet wiping, HEPA-vacuum cleaning or other appropriate methods and contain waste in a timely manner.

P. All used polyethylene, tape, cleaning materials, and disposable PPE shall be managed as ACWM.

3.04 FIELD QUALITY CONTROL

A. Provide in accordance with Division 100 General Conditions. Comply with applicable reference standards listed in Article 1.03.

B. Contractor shall immediately report any breach in containment, health and safety incidents, and/or any onsite visits by a regulatory agency to the Owner.

C. The work shall be conducted in manner that is protective of building materials scheduled to remain in place.

D. Project Monitoring

1. The Owner or Owner's Representative shall monitor the performance of the work of this Section and perform general recordkeeping.

2. The Contractor shall ensure cooperation of its personnel with the Owner or the Owner's Representative for project monitoring functions.

3. The Contractor shall provide access to all areas required by the Owner's Representative for the purposes of inspection and/or monitoring to verify completion of the work.

E. Site/Field Tests and Inspections

1. The Owner or Owner's Representative shall conduct all Site/Field Test and Inspections.

3.05 INSPECTIONS AND CLEARANCES

A. Provide written or verbal notice to Owner's Representative in advance of the completion of cleaning activities after removal of all ACP from each work area.

B. The Owner's Representative will visually inspect the work area for the detection of any visible dust, debris, or contamination. The Contractor shall perform additional removal of asbestos-containing materials and / or debris and shall repeat final cleaning of the work area until the level of cleanliness has been approved by the Owner's Representative. Additional removal and cleaning shall be at the Contractor's sole expense.

C. Provide all necessary support for the Owner's Representative to conduct the required final visual inspection of the work area and final air clearance testing. Support shall include providing all necessary temporary lighting, scaffolding, ladders, electrical power, and decontamination facilities.

D. Contractor shall allow a minimum of 24 hours in the project schedule for each work area for final air clearance testing by the Owner's Representative after successful completion of the Owner's Representative's visual inspection of the work area.

E. The minimum air volume for final air clearance sampling will be 1,200 liters. Air clearance samples will be analyzed on site by Phase Contrast Microscopy (PCM) or off-site by transmission electron microscopy (TEM) as determined by the Owner's Industrial Hygienist.

F. Clearance criteria shall be that analysis of all samples must indicate less than or equal to 0.01 fibers per cubic centimeter (f/cc) of air using PCM, or an average asbestos loading of less than 70 asbestos structures per square millimeter of filter surface area for five samples using TEM clearance methods.

G. In the event that clearance samples do not meet the clearance criteria specified above, the Contractor shall provide the necessary labor, equipment, and materials for all additional cleaning and decontamination required for the work area to meet the specified clearance criteria at no additional cost to the Owner.

3.06 DISPOSAL

A. The Contractor and Contractor's waste transporter shall comply with current DOT, EPA, OSHA and State waste handling, transportation, and disposal regulations for the work site, for each state through which the waste is transported, and for each waste disposal landfill.

B. Disposal of ACM shall be in an Owner-approved landfill authorized to accept ACM, operated in accordance with regulatory requirements of 40 CFR Part 61 (NESHAP) and applicable state and local regulations. If waste materials are commingled with other regulated wastes, the waste shall be managed for disposal as required by the regulation(s) governing the collective waste stream.

C. The waste transporter shall have appropriate, current Department of Transportation (DOT) licenses and registrations and/or possess any other required licenses, registrations, or permits.

D. Provide WSRs for all ACM waste generated. Copies of WSRs shall be delivered to Owner's Representative prior to any waste leaving the site. WSRs signed by the disposal facility shall be provided to Owner within 35 days of the waste leaving the site.

3.07 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 100 General Conditions.

827.02 Method of Measurement

Asbestos cement pipe removal and disposal shall be measured by the linear foot measured along the centerline of the pipe for the actual number of linear feet of pipe removed and disposed.

827.03 Basis of Payment

The accepted quantities of pipe will be paid for at the contract unit price per linear foot, completely removed and disposed of. Payment shall be full compensation for complete removal and disposal of asbestos cement sewer main and asbestos contaminated soils in accordance with this Special Provision, including, but not limited to, proper removal, transport, and disposal of identified asbestos-containing cement pipe and resultant asbestos-contaminated soils, asbestos abatement activities within fully enclosed negative pressure asbestos abatement work areas (glovebag), filing and payment for all notifications and permits necessary to complete the work, and providing all temporary connections, electrical cords, hoses, water heaters, and other equipment as required for asbestos abatement and air clearance sampling needs, and associated work as specified and shown on the Drawings.

Payment shall be full compensation for all labor and materials for a complete installation.

Payment will be made under:

Pay Item		Pay Unit
827.3641	Remove and Dispose Asbestos Cement Pipe	Linear Foot

SPECIAL PROVISION
SECTION 890
BUS SHELTER

The provisions of the 2020 Standard Specifications with the following additions shall apply:

890.01 Description

This work consists of purchasing and installing a canopy structure for use as a bus shelter. The product and material shall be the Grand-Gard Model 5x9 by Duo-Gard Industries, or other approved equal consistent with the requirements of the Greater Portland Transit District.

890.02 Submittals

The Contractor shall provide shop drawings for fabrication, installation and erection of all parts of the work. Provide plans, elevations and details of anchorages, connections and accessory items. Show all interfaces and relationships to work of other trades. Shop drawings shall be submitted in accordance with Section 105.7 Working Drawings.

890.03 Installation

Installation of the canopy structure shall be in accordance with manufacturer's recommendations or as directed by the Resident. Colors and finishes shall be confirmed by the Resident.

890.09 Method of Measurement

The Bus Shelter and all incidentals necessary to complete the bus shelter installation will be measured for payment by the lump sum, installed and accepted in place.

890.10 Basis of Payment

The Bus Shelter will be paid for by the contact lump sum price. Such payment will be full compensation for purchasing and installing the bus shelter, including all its components including but not limited to glass panels, roof panels, display case, lighting, free-standing bench, and all necessary anchoring hardware. This item will include all labor, tools, hardware and other incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
890.06	Bus Shelter	Lump Sum

SPECIAL PROVISION
SECTION 890
BIKE RACK

The provisions of the 2020 Standard Specifications with the following additions shall apply:

890.01 Description

This work consists of purchasing and installing bike racks in accordance with the plans and with vendor instructions and requirements. The product and materials shall be the Bola Bike Rack by Landscape Forms, or approved equal. The Contractor shall coordinate with the Resident to confirm the color. Bike racks shall be anchored into a subsurface concrete base and shall include all plates, anchors, tamper-proof nuts and related hardware.

890.09 Method of Measurement

Bike Racks, all necessary hardware, and incidentals will be measured for payment by each bike rack installed and accepted in place.

890.10 Basis of Payment

The quantity of bike racks will be paid for by the contact unit price for each installation. Such payment will be full compensation for furnishing and installing bike rack, the concrete base, welded wire mesh, along with all labor, tools, hardware and other incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
890.07	Bike Racks	Each

September 22, 2025
Supersedes December 17, 2024

2020 STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:
http://maine.gov/mdot/contractors/publications/standarddetail/

Detail #	Description	Posted Date
502(06)	Concrete Sidewalk on Bridges	9/22/2025
502(19)	Bridge Drains	3/17/2023
502(15)	Bridge Drains	3/17/2023
502(20)	Bridge Drains	3/17/2023
502(23)	Bridge Drains	3/17/2023
502(24)	Bridge Drains	3/17/2023
502(25)	Bridge Drains	3/17/2023
502(26)	Bridge Drains	3/17/2023
504(07)	Diaphragm & Crossframe Notes	3/17/2023
507(04)	Steel Bridge Railing	9/22/2025
507(05)	Steel Bridge Railing	9/22/2025
507(06)	Steel Bridge Railing	9/22/2025
507(07)	Steel Bridge Railing	9/22/2025
507(14)	Steel Bridge Railing	9/22/2025
507(15)	Steel Bridge Railing	9/22/2025
507(20)	Steel Approach Railing 3-Bar	2/11/2021
507(21)	Steel Approach Railing 3-Bar	2/11/2021
507(22)	Steel Approach Railing, 3 Bar	9/22/2025
507(23)	Steel Approach Railing, 3 Bar	9/22/2025
507(26)	Steel Approach Railing, 3 Bar	9/22/2025
507(27)	Steel Approach Railing	9/22/2025
507(39)	Barrier – Mounted Steel Bridge Rail	9/22/2025
526(01)	Portable Concrete Barrier	1/14/2021
526(01A)	Portable Concrete Barrier	1/14/2021
526(01B)	Portable Concrete Barrier	1/14/2021
526(02)	Portable Concrete Barrier	1/14/2021
526(02A)	Portable Concrete Barrier	1/14/2021
526(03)	Portable Concrete Barrier	1/14/2021
526(04)	Portable Concrete Barrier	1/14/2021

526(04A)	Portable Concrete Barrier	1/14/2021
526(04B)	Portable Concrete Barrier	1/14/2021
526(05)	Permanent Concrete Barrier	3/17/2023
526(21)	Permanent Concrete Barrier	3/17/2023
526(22)	Concrete Transition Barrier	9/22/2025
526(23)	Concrete Transition Barrier	9/22/2025
526(23)A	Concrete Transition Barrier	9/22/2025
526(34)	Concrete Transition Barrier	9/22/2025
526(35)	Concrete Transition Barrier	9/22/2025
526(36)	Concrete Transition Barrier	9/22/2025
526(37)	Concrete Transition Barrier	9/22/2025
526(37) A	Concrete Transition Barrier	9/22/2025
526(38)	Concrete Transition Barrier	9/22/2025
526(39)	Texas Classic Rail	3/17/2023
526(55)	Texas Classic Rail	3/17/2023
603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	7/8/2022
605(01)	Underdrain Notes	7/8/2022
606(17)	Midway Splice Guardrail Transition	6/10/2022
606(21)	Guardrail Type 3 – Single Rail Bridge Mounted	9/22/2025
606(22)	Guardrail Treatment over Buried Structures	9/22/2025
606(23)	Standard Bridge Transition – Type “1”	2/11/2021
606(24)	Bridge Transition – Type “1A”	9/22/2025
606(25)	Bridge Transition – Type “2”	9/22/2025
607(10)	Snow Fence Details (New Detail)	9/22/2025
607(11)	Snow Fence Details (New Detail)	9/22/2025
607(12)	Snow Fence Details (New Detail)	9/22/2025
607(13)	Snow Fence Details (New Detail)	9/22/2025
607(14)	Snow Fence Details (New Detail)	9/22/2025
607(15)	Snow Fence Details (New Detail)	9/22/2025
607(16)	Snow Fence Details (New Detail)	9/22/2025
608(02)	Detectable Warnings	6/10/2021
609(08)	Precast Concrete Transition Curb	9/22/2025
609(09)	Precast Concrete Vertical Curb	9/22/2025
627(07)	Crosswalk	2/22/2022
627(08)	Crosswalk	2/22/2022

643(11)	ATCC Cabinet	12/14/2020
645(06)	H Beam Posts Highway Signing	12/17/2024
645(21)	Overpass Mounted Sign Support Highway Signing	9/22/2025
645 (22)	Overpass Mounted Sign Support Highway Signing	9/22/2025
801(10) Pavement Transition at Bridge	DISCONTINUE THIS STD DETAIL	9/22/2025
801(11)	Pedestrian Ramp Notes	11/20/2023
801(12)	Pedestrian Ramp Requirements	11/20/2023
801(13)	Ramp Length Table	11/20/2023
801(14)	Parallel Pedestrian Ramp	11/20/2023
801(15)	Perpendicular Pedestrian Ramp – Option 1	11/20/2023
801(16)	Parallel Pedestrian Ramp – Option 2A	11/20/2023
801(17)	Perpendicular Pedestrian Ramp – Option 2A	11/20/2023
801(18)	Parallel Pedestrian Ramp – Option 2B	11/20/2023
801(19)	Perpendicular Pedestrian Ramp – Option 2B	11/20/2023
801(20)	Parallel Pedestrian Ramp – Option 3	11/20/2023
801(21)	Perpendicular Pedestrian Ramp – Option 3	11/20/2023
801(22)	Side Street Pedestrian Ramp	11/20/2023
801(23)	Parallel Pedestrian Ramp – Esplanade	11/20/2023
801(24)	Perpendicular Pedestrian Ramp – Esplanade	11/20/2023
801(25)	Island Crossings	11/20/2023
801(26)	Blended Transition	11/20/2023
801(26)	Blended Transition	1/19/2024
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	11/20/2023
802(05)	Roadway Culvert End Slope Treatment	1/03/2017
802(05)	Roadway Culvert End Slope Treatment	11/01/2024

SUPPLEMENTAL SPECIFICATIONS
(Corrections, Additions, & Revisions to Standard Specifications – March 2020)

SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions

Construction Easement revise this definition by removing it in its entirety and replace with; **"A right acquired by the Department for a specific use of private property outside of the established Right-of-Way. Examples include but are not limited to Drainage Easements, Construction and Maintenance Easements, and Slope Easements. Construction Easement areas, including Temporary Construction Limits and Temporary Road Limits, outside of the Right-of-Way remain private property. No use other than to access and perform the specified work activity is permitted without written permission of the owner."**

Construction Limit Line Remove this definition in its entirety.

Holidays Amend this paragraph by adding "**Juneteenth**" between 'Memorial Day' and 'Independence Day'.

Plans Revise this paragraph by removing "**Standard Details, Supplemental Standard Details**" from the first sentence.

Project Limits Revise this definition by removing it in its entirety and replacing it with: **"Areas within the Right-of-Way, Construction Easements, or Temporary Construction Limits shown on the Plans or otherwise indicated in the Contract. If no Project Limits are indicated in the Contract, the Project Limits shall be determined by the Department. For a related Maine statute, see 23 MRSA § 653. "**

Right-Of-Way Revise this definition by removing it in its entirety and replacing it with: **"The area of land, property, or interest therein, acquired for or devoted to the Project or other purposes. Portions of the Right-of-Way may be used for storage of materials and equipment and the location of engineering facilities, subject to written approval by the Department."**

Amend this Section by adding the following two definitions (that replace Construction Limit Line);

Temporary Construction Limits The area within which the Contractor may access and perform the Physical Work and outside of which Work may not be performed without written authorization by the property owner.

Temporary Road Limits The area within which the Contractor may construct and maintain a temporary detour for maintenance of traffic.

SECTION 102
BIDDING

102.11 Bid Responsiveness Revise the paragraph that states
"The Bid is not signed by a duly authorized representative of the Bidder." So that it reads:

"**The Bid is not signed by a duly authorized representative of the Bidder.**
- **Properly submitted electronic bids meet this requirement.**
- **Paper bids must include at least one signed copy of the Contract Agreement Offer & Award form**."

SECTION 103
AWARD AND CONTRACTING

103.3.1 Qualification Requirement for Award Revise this subsection so that it reads:

"**103.3.1 Qualification Requirement for Award If the Notice to Contractors lists a Prequalification requirement, the Apparent Successful Bidder must successfully complete the Prequalification process as a condition of Award. The Apparent Successful Bidder who does not already hold an Annual Prequalification shall have 21 days to provide the Department with their Prequal documents or the Department may move on to the next low bidder."**

SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES

104.2.1 Furnishing of Right-of-Way Revise this subsection by removing it in its entirety and replace with the new subsection:

"104.2.1 Furnishing of Property Rights The Department will secure all necessary rights to real property within the Project Limits shown on the Right-of-Way Plans that are provided with the Bid Documents. For related provisions, see Sections 104.3.2 – Furnishing of Other Property Rights, Licenses and Permits and 105.4.5 - Maintenance of Existing Structures. For related definitions, see Construction Easements and Right-of-Way."

104.3.2 Furnishing of Other Property Rights, Licenses and Permits Revise this subsection by replacing "104.2.1 Furnishing of Right-of-Way" with "**104.2.1 Furnishing of Property Rights".**

SECTION 105
GENERAL SCOPE OF WORK

Amend this Section by adding this new sub-section:
105.8.8 Protected Species If the Contractor witnesses a bat (dead or alive), any activities that may injure any live bats must cease immediately and the Contractor shall contact the

Resident. Dead and/or injured bats will be collected by the Department. Work in the vicinity of the live/dead bat sighting will not resume until the Department confirms it is acceptable to do so.

If the Contractor observes an active bird nest within the project limits, any activities that may disturb the nest or injure birds (i.e., nesting adults, chicks, eggs) must cease immediately, and the Contractor shall contact the Resident.

Amend this Section by adding this new sub-section to cover incidents in the field:
105.6.5 Survey Control Markers **If a survey control marker will be disturbed by Work on a project, the Resident shall be informed a minimum of 2 weeks prior to performing any Work that may disturb the marker. If a survey control marker is accidentally disturbed by Work on a project, the Resident shall be informed immediately. A disturbed marker will remain the property of the Department.**

105.10.1.4 Race-conscious Project Goals Revise the second paragraph of this section so it reads as follows:
*"***At the time of the bid opening, all Bidders shall submit with their bid a Disadvantaged Business Enterprise (DBE) Commitment Form provided by the Department. This form will list the DBE and non-DBE firms that are proposed to be used during the execution of the Work. This form must be filled out in its entirety. The dollar total of each commitment shall be totaled and a percentage determined.***"*

105.10.2 Requirements Applicable to All Contracts Under section A, number 2, in the first sentence of the first paragraph, revise this Section by replacing the word "handicap" in two places with the word "disability" so it now reads:

"2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, State that all qualified applicants will receive consideration for employment without regard to race, color, sexual orientation, religious creed, sex, national origin, ancestry, age, physical disability, or mental disability."

105.10.1.6 Bidders' List Survey This section shall be revised to meet the May 9, 2024 CFR changes as follows:
Revise the title of this Section to "**Bidders' List**" by removing the word "**Survey**".
Revise the current information required to:

(i) Firm name;
(ii) Firm address including ZIP code;
(iii) Firm's status as a DBE or non-DBE;
(iv) Race and gender information for the firm's majority owner;
(v) NAICS code applicable to each scope of work the firm sought to perform in its bid;
(vi) Age of the firm; and

**(vii) The annual gross receipts of the firm. You may obtain this information by asking each firm to
indicate into what gross receipts bracket they fit (*e.g.,* less than $1 million; $1-3 million; $3-6 million; $6-10 million; etc.) rather than requesting an exact figure from the firm.**

Revise this section by removing the paragraph beginning with "This information…" and replacing it with the following:
"This data is required from all bidders for federally assisted contracts to be submitted with their bids as this information is critical in determining the availability of DBE Businesses relative to other businesses that do similar work."

SECTION 106
QUALITY

106.6 Acceptance Revise this Subsection by replacing the paragraph beginning with "Acceptance of Hot Mix Asphalt Pavement will be based" with:

"Acceptance of Hot Mix Asphalt Pavement will be based on Method A or C Statistical Acceptance, or Method B or D Acceptance as specified. The method of acceptance for each item is defined in Special Provision, Section 403, Hot Mix Asphalt Pavement. When items of Hot Mix Asphalt Pavement are not so designated, Method A will be utilized whenever there are more than 1000 tons per Hot Mix Asphalt Pavement item, and Method B will be utilized when there are less than or equal to 1000 tons per Hot Mix Asphalt Pavement item."

Revise Subsection "B" by removing it and replacing it with:

"B. Items not designated for Statistical Acceptance will utilize Method B or D Acceptance testing to validate the quality of the material incorporated into the Project. For material paid under Item 403.209 – Method D, or designated to be visually accepted, the Contractor shall provide the Department with a Certification Letter that indicates that the material supplied complies with the Specifications. Test results representative of the certified material shall be attached to the letter.

The Department will randomly sample and test the certified Material for properties noted in Table 1 of Section 502 - Structural Concrete or Table 14 of Section –401.21 Acceptance Method B & D. Material will be subject to rejection as noted in Structural Concrete Section 502.195 - Quality Assurance Method C Concrete or Hot Mix Asphalt, Section 401.2022 Pay Adjustment – Method B & D."

106.7.1 Standard Deviation Method Revise 106.7.1, subsection H by removing the following from the first paragraph:

"Method B: PF = [70 + (Quality Level * 0.33)] * 0.01"
106.9.1 Warranty by Contractor Revise the third paragraph of this section so that it reads:

"**For a related provision regarding obligations regarding plantings, see section 621.36 – Maintenance Period.** "

SECTION 107
TIME

107.3.1 General Amend this paragraph by adding "**Juneteenth**" between 'Patriot's Day' and 'the Friday after Thanksgiving'.

SECTION 108
PAYMENT

108.2.3 Mobilization Payments Replace Standard Specification 108.2.3 – Mobilization Payments with the following:

"**108.2.3 Mobilization Payments "Mobilization" includes the mobilization and demobilization of all resources as many times as necessary during the Work.**

Percent Mobilization Bid will be determined by taking the amount Bid for Mobilization and dividing by the Total Contract Amount less Mobilization. Mob/(Total Contract – Mob).

Payment will be made at the following intervals:

% Mobilization Bid	% Mobilization Paid at Contract Award	% Mobilization Paid after the Department determines 50% of the work is Complete	% Mobilization Paid at Final Acceptance
10% or less	50%	50%	
More than 10% to 15%	33%	33%	34%
More than15% to 20%	25%	25%	50%
More than 20% to 30%	15%	15%	70%
Greater than 30%	10%	10%	80%

108.3 Retainage Revise the third paragraph of this section so that it reads:

"Upon Final Acceptance, and determination by the department that there are no claims either by or on the Contractor or Subcontractors; no over payments by the department; no LDs due; and no disincentives due, the Department will reduce Retent to 1% of the original Contract Award amount, or $100,000, whichever is less, as it deems desirable and prudent."

108.4.1 Price Adjustment for Hot Mix Asphalt Revise this section by removing it in its entirety and replacing it with the following:

"108.4.1 Price Adjustment for Hot Mix Asphalt: For each Contract, a price adjustment for performance graded binder will be made for the following pay items, when the total quantity of Hot Mix Asphalt included in these items is in excess of 500 tons, based on the estimated quantities of these items at the time of bid.

Item 403.102	**Hot Mix Asphalt – Special Areas**
Item 403.207	**Hot Mix Asphalt - 19 mm**
Item 403.2071	**Hot Mix Asphalt - 19 mm (Polymer Modified)**
Item 403.2072	**Hot Mix Asphalt - 19 mm (Asphalt Rich Base)**
Item 403.208	**Hot Mix Asphalt - 12.5 mm**
Item 403.2081	**Hot Mix Asphalt - 12.5 mm (Polymer Modified)**
Item 403.2084	**Hot Mix Asphalt - 12.5 mm (Highly Modified HiMAP)**
Item 403.209	**Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)**
Item 403.210	**Hot Mix Asphalt - 9.5 mm**
Item 403.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 403.2104	**Hot Mix Asphalt - 9.5 mm (Thin Lift Surface Treatment)**
Item 403.21041	**Hot Mix Asphalt - 9.5 mm (Polymer Modified Thin Lift Surface Treatment)**
Item 403.211	**Hot Mix Asphalt – Shim**
Item 403.2111	**Hot Mix Asphalt – Shim (Polymer Modified)**
Item 403.212	**Hot Mix Asphalt - 4.75 mm (Shim)**
Item 403.213	**Hot Mix Asphalt - 12.5 mm (base and intermediate course)**
Item 403.2131	**Hot Mix Asphalt - 12.5 mm (base and intermediate course Polymer Modified)**
Item 403.2132	**Hot Mix Asphalt - 12.5 mm (Asphalt Rich Base and intermediate course)**
Item 403.301	**Hot Mix Asphalt (Asphalt Rubber Gap-Graded)**
Item 461.13	**Light Capital Pavement**
Item 461.210	**9.5 mm HMA - Paver Placed Surface**
Item 461.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 461.216	**Hot Mix Asphalt (Shim)**
Item 462.30	**Ultra-Thin Bonded Wearing Course**
Item 462.301	**Polymer Modified Ultra-Thin Bonded Wearing Course**

Price adjustments will be based on the variance in costs for the performance graded binder component of hot mix asphalt. They will be determined as follows:

The quantity of hot mix asphalt for each pay item will be multiplied by the performance graded binder percentages given in the table below times the difference in price between the base price and the period price of asphalt cement. Adjustments will be made upward or downward, as prices increase or decrease.

Item 403.102–6.2%
Item 403.207–5.2%
Item 403.2071–5.2%
Item 403.2072–5.8%
Item 403.208–5.6%
Item 403.2081–5.6%
Item 403.2084 – 6.2%
Item 403.209–6.2%
Item 403.210–6.2%
Item 403.2101–6.2%
Item 403.2104–6.2%
Item 403.21041–6.2%
Item 403.211–6.2%
Item 403.2111–6.2%
Item 403.212–6.8%
Item 403.213–5.6%
Item 403.2131–5.6%
Item 403.2132–6.2%
Item 403.301–6.2%
Item 461.13–6.7%
Item 461.210 – 6.4%
Item 461.2101 – 6.4%
Item 461.216 – 6.7%
Item 462.30–0.0021 tons/SY
Item 462.301–0.0021 tons/SY"

SECTION 110
INDEMNIFICATION, BONDING, AND INSURANCE

110.3.2 Commercial General Liability Revise the last sentence in this Section that starts with "The coverage shall also…" and add a sentence to the end so that it reads:

"**The coverage shall also include protection against damage claims due to explosives, collapse, and underground coverage. No endorsement excluding damage caused by subsidence, earth movement, and/or earth pressure shall be permitted.**"

110.3.9 Administrative & General Provisions Amend this subsection by adding "**Automobile Liability**" under letter A) Additional Insured to the list of exceptions.

10. Assurance Required by 49 CFR: 26.13(a)(b) Revise this section by removing it in its entirety and replacing it with the following:

"a. MaineDOT shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT-assisted contract or in the administration of its DBE Program or the requirements of 49 CFR part 26. MaineDOT shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. MaineDOT's DBE Program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. The implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the MaineDOT of its failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the MaineDOT of its failure to carry out its approved program, the Department may impose sanctions as provided for under 49 CFR Part 26, and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Remedies Act of 1986 (31 U.S.C. 3801 et seq.). This language will appear in financial assistance agreements with sub-recipients.

b. The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, including, but not limited to:

1. **Withholding monthly progress payments;**
2. **Assessing sanctions;**
3. **Liquidated damages; and/or**
4. **Disqualifying the contractor from future bidding as non-responsible."**

SECTION 206
STRUCTURAL EXCAVATION

206.01 Description – *Structural Earth Excavation, Below Grade* delete the entire sentence and replace with "**shall consist of the removal of excavation required for unknown or unanticipated subsurface condition. See 206.04 – Method of Measurement for pay limits**."

206.04 Method of Measurement – Drainage and Minor Structures Paragraph 1, sentence 2, delete the remainder of the sentence beginning with "….provided the maximum allowable…"And replace with: **"….in accordance with the following limits:"**

- **Vertical pay limits:**

- **Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or**
- **Below the excavation limits shown in the Bid Documents; whichever is greater.**

- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

SECTION 401
HOT MIX ASPHALT PAVEMENT

401.19 Contractor Quality Control Amend this Section by adding the following to the end:
"Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all items covered by the QCP as identified in Special Provision 403."

SECTION 501
FOUNDATION PILES

501.044 Special Requirements for Steel Pipe Piles and Steel Casings Amend this section by deleting it in its entirety and replacing with:

Pipe piles shall be driven closed ended, unless otherwise specified. When open-ended pipe piles are specified or when the ends are not completely closed ended when driven, the inside of the pile shall be thoroughly cleaned out, and the inside walls cleaned by jetting or other means approved by the Resident. The sediment control required for the cleaning operations shall be covered in the Contractor's SEWPCP.

Pipe piles shall be inspected and approved by the Resident immediately before concrete is placed in them. They shall be free from rupture and undue deformation and shall be free from water unless the Resident determines that the concrete can be placed without damage to the pile and such that the discharged water will be contained. The Contractor shall provide lights and other equipment necessary to enable the Resident to inspect each pipe pile.

Portland cement concrete for filling the pipe piles shall be placed in one continuous operation to fill the pile completely without causing water contamination. An internal type vibrator shall be used in the top 25 feet. Pile heads shall be protected and cured in accordance with Section 502, Structural Concrete.

The placing of concrete and the driving of piles shall be scheduled so that fresh and setting concrete will not be injured by the pile driving.

Concrete shall not be placed in pipe piles until pile driving has progressed beyond a radius of 15 feet from the pile to be concreted. If pile heave is detected for pipe piles that have been filled with concrete, the piles shall be redriven to the original position after the concrete has attained sufficient strength and a proper hammer-pile cushion system, is in place and is satisfactory to the Resident.

When a reinforcing steel cage is specified, it shall be placed inside the piles to allow for a minimum of 2 inches of concrete cover and the piles shall be filled with concrete to the elevation shown on the Plans.

Full-length pipe piles and steel casings shall be used wherever practicable; however, splicing may be permitted when approved by the Resident. The method of splicing shall be as follows:

a. Steel pipe piles and steel casings shall be spliced by full penetration butt joint welds.

b. When the pipe piles and steel casings are to be spliced while in a vertical position, splicing shall be accomplished utilizing single-bevel groove welds with the use of back-up rings. When the pipe piles and steel casings are to be spliced while in a horizontal position, splicing shall be accomplished utilizing single-vee groove welds with the use of back-up rings.

c. Welded joints shall conform to the Standard Details.

501.047 Splicing Piles Amend this section by deleting it in its entirety and replacing it with:

Full-length piles shall always be used wherever practicable. When full-length piles cannot be used, the number of splices, locations, and details shall be noted in the QCP. Piles fabricated from multiple pieces will be acceptable only if they comply with the following:

H-Beam Piles [a]		Pipe Piles and Steel Casings [a,b]	
Lengths	**Maximum No. Field Splices**	**Lengths**	**Maximum No. Field Splices**
Less than 20 ft.	**0**	**Less than 20 ft.**	**0**
Over 20 – 35 ft.	**1**	**Over 20 – 40 ft.**	**1**
Over 35 – 79 ft.	**2**	**Over 40 – 60 ft.**	**2**
Over 79 ft.	**1 per 40 ft.**	**Over 60 – 80 ft.**	**3**
		Over 80 ft.	**1 per 20 ft.**
[a] Pile lengths less than 10 feet will not be spliced, except as the final (top) section of the pile. [b] Where pipe piles are used for pile bent piers, no splices will be allowed in the length of pile from the cutoff elevation to 2 feet below the channel bottom.			

When pre-planned splicing is approved, the pile piece of lesser length shall be placed at the tip of the pile (the first part of the pile that enters the ground).

When splicing is allowed, the work shall be done in accordance with the following:

A. Welding shall be done in accordance with the requirements of the AWS D1.1 welding code.
B. Qualify welders in accordance with the most recent edition of the AWS D1.5 code.
C. Submit a written Weld Procedure Specification (WPS) for each joint to be included as part of the QCP. The WPSs shall be provided to the Fabrication Engineer for review and approval prior to beginning welding. Provide copies of the approved WPSs to the welder, QC Inspector and Resident prior to beginning welding. Welding performed without an approved WPS and approved QCP will be considered Unacceptable Work.
D. Provide a list of qualified welders with copies of their AWS certifications to the Fabrication Engineer for review prior to beginning welding. Welders shall have in their possession, at the time of welding, a valid certification for the process and position to be used in production from the AWS. The welder shall show the Resident their credentials upon request.
E. The Contractor shall only use electrodes that are on the Department's Qualified Products List for Welding Electrodes or shall submit alternative electrodes for review and approval by the Fabrication Engineer. Electrodes used shall match those approved for use in the WPS.
F. Welding shall not be done: When the temperature in the immediate vicinity of the weld is below 0°F; when the surfaces are damp or exposed to rain, snow, or high wind; or when the welders or welding operators are exposed to inclement conditions.
G. The pile shall be preheated to and maintained at 150°F minimum, within 6 inches from the joint during welding.
H. Power sources for welders shall have meters indicating amperage/voltage that have been calibrated within 1 year at the time of welding.
I. The Contractor shall provide the Department with notice, a minimum of, 7 Days prior to the start of any welding.
J. The Contractor shall provide a QC Inspector to perform QC for the welds in accordance with the AWS D1.1 welding code. The QC Inspector shall be an AWS Certified Welding Inspector (CWI) in conformance with the requirements of AWS QC1, Standard for AWS Certifications of Welding Inspectors. The Contractor may submit, in lieu of a CWI, an alternative QC Inspector with documented training and experience in metals fabrication, inspection, and testing for approval by the Fabrication Engineer. The QC Inspector shall be someone other than the welder performing the welds to be inspected.
K. The QC Inspector shall inspect all production stages of the welded splice to ensure that workmanship and materials meet the requirements of the AWS D1.1 welding code and the Contract. The QC Inspector shall submit a signed record of all weld inspection documentation to the Resident after welding is completed.

Record of weld inspection shall include, but not be limited to, the following:

1. **Name of QC Inspector**
2. **Project WIN and Location**
3. **Date**
4. **Weather conditions**
5. **Type, size, length, and location of welds.**

6. **Confirmation of appropriate equipment and materials used, including proper handling of welding electrodes.**
7. **Confirmation that welder has approved WPS onsite, and welding is performed in accordance with approved WPS.**
8. **Confirmation that welder is qualified to perform work per approved WPS. Include name and certifications of qualified welder who performed the work.**
9. **Confirm that 100% visual testing, in accordance with AWS D1.1 Table 8.1, has been conducted and any subsequent repairs are made prior to non-destructive testing (NDT).**
10. **Document NDT testing including name of NDT technician, NDT personnel qualifications, type and extent of NDT testing performed, and include NDT testing reports provided by the NDT testing technician.**

L. Piles shall not be driven until all pile welding has been inspected and accepted by the Department.

501.0471 Specific Requirements for Splicing H-Beam Piles

A. Damaged material shall be removed from the end of the driven pile. Lifting holes shall be repaired or trimmed off. The ends of both pieces to be spliced shall be cut off square with the longitudinal axis of the pile and beveled per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. The Contractor shall use an approved mechanical splicer or a full penetration butt weld for the entire cross section of the pile. Mechanical splicers shall be installed per the manufacturer's recommendations, except that the flanges shall be welded using a complete joint penetration weld, per the AWS D1.1 welding code.

C. In addition to the 100% visual testing (VT) performed by the QC Inspector, the Contractor shall perform NDT on the first two welded splices of the same type/size. The welds shall be radiographically (RT) or ultrasonically (UT) tested for their full length for acceptance per Table 8.2 of AWS D1.1. If both RT/UT-tested splices are determined to be acceptable, no further NDT will be required. If either of the first two RT/UT-tested splices contain defects warranting rejection, RT/UT testing of splices shall continue until two consecutive splices are found to be acceptable.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.0472 Specific Requirements for Splicing Steel Pipe Piles and Steel Casings

A. Damaged material shall be removed from the end of the driven pile. Lifting holes shall be trimmed off. The ends of both pieces to be spliced shall be cut off square with the

longitudinal axis of the pile and beveled per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Splices shall be welded using an AWS D1.1 Complete Joint Penetration butt weld with a backer ring.

C. In addition to the 100% VT performed by the QC Inspector, the Contractor shall perform NDT on the first two welded splices of the same type/size. The welds shall be RT or UT tested for their full length for acceptance per Table 8.2 of AWS D1.1. If both RT/UT-tested splices are determined to be acceptable, no further NDT will be required. If either of the first two RT/UT-tested splices contain defects warranting rejection, RT/UT testing of splices shall continue until two consecutive splices are found to be acceptable.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.048 Prefabricated Pile Tips Amend this section by deleting it in its entirety and replacing it with:

Welding of pile tips shall be done in accordance with the following:

A. Welding shall be done in accordance with the requirements of the AWS D1.1 welding code.

B. Qualify welders in accordance with the most recent edition of the AWS D1.5 code.

C. Submit a written WPS for each tip to be included as part of the QCP. The WPSs shall be provided to the Fabrication Engineer for review and approval prior to beginning welding. Provide copies of the approved the WPS to the welder and Resident prior to beginning welding. Welding performed without an approved WPS and approved QCP will be considered Unacceptable Work.

D. Provide a list of qualified welders with copies of their AWS certifications to the Fabrication Engineer for review prior to beginning welding. Welders shall have in their possession, at the time of welding, a valid certification for the process and position to be used in production from the AWS or other organization acceptable to the Resident. The welder shall show the Resident their credentials upon request.

E. The Contractor shall only use electrodes that are on the Department’s Qualified Products List for Welding Electrodes or shall submit alternative electrodes for review and approval by the Fabrication Engineer. Electrodes used shall match those approved for use in the WPS.

F. Pile tips shall be approved by the Resident.

G. Welding shall not be done: When the temperature in the immediate vicinity of the weld is below 0°F; when the surfaces are damp or exposed to rain, snow, or high wind; or when the welders or welding operators are exposed to inclement conditions.

H. The pile shall be preheated to and maintained at 150°F minimum within 6 inches from the joint during welding.
I. Power sources for welders shall have meters indicating amperage/voltage that have been calibrated within 1 year at the time of welding.
J. Pile tips may be welded to the piles by the pile supplier upon approval by the Department. Approval is contingent upon submission of the following: A welding QC Plan; proof that the proposed welder(s) is certified per AWS D1.5; and an AWS D1.1 WPS, with base metal preheated to a minimum of 150°F. The Contractor shall provide notice a minimum of 14 Days prior to the start of any welding by the pile supplier. At a minimum, welds shall be 100% visually inspected by the pile supplier's QC representative.
K. The Contractor shall provide a QC Inspector to perform QC for the welds in accordance with the AWS D1.1 welding code. The QC Inspector shall be an CWI in conformance with the requirements of AWS QC1, Standard for AWS Certifications of Welding Inspectors. The Contractor may submit, in lieu of a CWI, an alternative QC Inspector with documented training and experience in metals fabrication, inspection, and testing for approval by the Fabrication Engineer. The QC Inspector shall be someone other than the welder performing the welds to be inspected.
L. The QC Inspector shall inspect all production stages of the welded splice to ensure that workmanship and materials meet the requirements of the AWS D1.1 welding code and the Contract. The QC Inspector shall submit a signed record of all weld inspection documentation to the Resident after welding is completed.

M.

Record of weld inspection shall include, but not be limited to, the following:

1. Name of QC Inspector
2. Project WIN and Location
3. Date
4. Weather conditions
5. Type, size, length, and location of welds.
6. Confirmation of appropriate equipment and materials used, including proper handling of welding electrodes.
7. Confirmation that welder has approved WPS onsite, and welding is performed in accordance with approved WPS.
8. Confirmation that welder is qualified to perform work per approved WPS. Include name and certifications of qualified welder who performed the work.
9. Confirm that 100% VT, in accordance with AWS D1.1 Table 8.1, has been conducted and any subsequent repairs are made prior to NDT.
10. Document NDT testing including name of NDT technician, NDT personnel qualifications, type and extent of NDT testing performed, and include NDT testing reports provided by the NDT testing technician.

N. The Contractor shall provide notice a minimum of 7 Days prior to the start of any field welding.

O. Piles shall not be driven until all pile welding has been inspected and accepted by the Department.

501.0481 Specific Requirements for Installing H-Beam Pile Tips

A. Damaged material shall be removed from the end of the driven pile, as applicable. Lifting holes shall be trimmed off. The end of the pile to which the tip is to be attached shall be cut off square with the longitudinal axis of the pile and prepared per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Regarding weld size, prefabricated pile tips shall be attached to H-beam piles with 5/16-inch groove welds along each flange, or as recommended by the manufacturer of the pile tips, whichever weld size is larger.

C. The QC Inspector shall, at a minimum, perform 100% VT on each pile tip weld.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.0482 Specific Requirements for Installing Steel Pipe Pile Tips

A. Damaged material shall be removed from the end of the driven pile, as applicable. Lifting holes shall be trimmed off. The end of the pile to which the tip is to be attached shall be cut off square with the longitudinal axis of the pile and prepared per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Unless otherwise shown on the Plans, steel pipe piles shall have pointed cast steel pile tips.

C. Regarding weld size, prefabricated pile tips shall be attached to steel pipe piles with a continuous 5/16-inch groove weld along the full perimeter of the pile, or as recommended by the manufacturer of the pile tips, whichever weld size is larger.

D. The QC Inspector shall, at a minimum, perform 100% VT on each pile tip weld.

E. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.05 Method of Measurement
c. Piles in Place Revise the third paragraph by replacing the "10" with "20" so that it reads:

Unused pile cutoffs **20** feet or more in length, except those required to accommodate the Contractor's construction method, as discussed herein, will remain the property of the Department and will be stored at a bridge maintenance yard nearest the project. Hauling and unloading of piles will be done by the Contractor or by the Department, depending upon availability of services.

SECTION 502
STRUCTURAL CONCRETE

502.03 Materials Amend this section by adding the following to the list of materials:

Combined Aggregate Grading for Concrete	703.03

502.07 Mixing and Delivery Remove the last sentence in Paragraph A that starts with "With prior approval… and replace with the following:

"An approved hydration stabilizing admixture may be used to increase the discharge time. Justification for the need for a hydration stabilizing admixture shall be provided in the QC Plan. When a hydration stabilizing admixture is used, the manufacturer, dosage rate and discharge time, from the time cement is added to the aggregate, shall be documented in the approved QC Plan. The proposed discharge time(s) shall be based on the manufacturer's written recommendations, the anticipated concrete temperatures and anticipated ambient conditions at the time of placement(s). Discharge time(s) shall be adjusted when conditions change or are not as anticipated as outlined in the approved QC Plan. The discharge time(s) approved by the Department shall be subject to change at any time, and discharge of concrete into the permanent work shall cease immediately if the concrete is determined to have attained Accelerated Hydration Gain. Accelerated Hydration Gain being the condition where the fresh concrete has hydrated to the point where the workability and finishability is detrimental to the quality of the final product. Determination of when concrete has attained Accelerated Hydration Gain shall be made by the Contractor's Quality Control Technician(s) and shall be based on parameters proposed by the Contractor in the QC Plan, such as, but not limited to, loss of slump, plasticity, or workability, an increase in concrete temperature, or a change in the percentage of entrained air."

502.09 Forms and Falsework Amend this subsection by adding the subsection title "**502.10 Placing Concrete**" after section "D" Removal of Forms and False work" and after the paragraph beginning with "2. Forms and False work, including blocking…". So that a new subsection starts and reads:

"**502.10 Placing Concrete**

A. **General Concrete shall not be placed until forms** …."

502.1701 Quality Control, Method A and B Revise this Section so that the first paragraph and the first sentence of the second paragraph read:

"**502.17 Quality Control The Contractor shall control the quality of the concrete through testing, inspection, and practices which shall be described in the QCP, sufficient to assure a product meeting the Contract requirements. The QCP shall meet the requirements of Section 106, Quality, and this specification. No work under this item shall proceed until the QCP is submitted to and approved by the Department. Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all cast-in-place items covered by the QCP, using the P value listed in Special Provision 502. If no P value is listed, a value of $350, or bid value per cubic yard, whichever is less, shall be used.**

502.1701 Quality Control, Method A and B The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following: "

Under the list with the heading, "The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following:":

Replace "F" to read: "**Mix and Transportation, including Time from Batching to Completion of Delivery, as well as manufacturer, product name, proposed dosage(s) and discharge time(s) if a hydration stabilizing admixture is used**."

Replace "H" to read: "**Process QC Testing, including monitoring for attainment of Accelerated Hydration Gain when a hydration stabilizing admixture is used**."

Revise this section by replacing the paragraph before Table 4 that starts out "The Contractor shall maintain…"to read:

"**The Contractor shall maintain records of all QC tests and calculations. All QC test data shall be signed by the person who performed the test. The representative gradation test results shall be reported to the Department before the placement they represent. This initial representative gradation test shall be sampled a maximum of 30 days prior to the production day. The Contractor or supplier shall retain split samples of the most recent QC gradations for possible testing by the Department. In addition, the Department will sample the aggregates at the plant monthly to determine compliance with 703.03 Combined Aggregate Grading for Concrete. The Combined Aggregate Grading will be calculated by mathematically blending the individual aggregate gradations using the batch percentages from the approved mix design. If the Department's gradation tests determine that the aggregate does not meet the specified gradation limits, the current procedure mentioned in MaineDOT PCC Policies and Procedures Manual shall be followed. The compressive strength test results shall be reported to the Department by 10:00 A.M. of the first working day following the test. The Contractor shall record all onsite QC test data and calculations at the time of the placement and present this information, on a form acceptable to the Department, to the Department by 10:00 A.M. of the first working day following the concrete placement. Batch tickets shall be representative of that day's total moisture in aggregate value, QC test data for total moisture in aggregate shall be provided to the**

Department by 10:00 A.M. of the first working day following the concrete placement. All Method A and B QC testing shall meet the minimum requirements found in Table 4."

Section 502.1701, Quality Control, Revise Table 4 of this Subsection by removing it in its entirety and replacing it with:

TABLE 4
METHOD A & B MINIMUM QUALITY CONTROL TESTING REQUIREMENTS*

TEST	TEST METHOD	SAMPLING LOCATION	FREQUENCY
Gradation	AASHTO T 27 & T 11	Stockpile	One representative set per proposed grading before production One set every 100 yd^3 (Min. 1 set per month)
Organic Impurities	AASHTO T 21	Stockpile	Once per fine aggregate per year**
% Absorption	AASHTO T 84 & T 85	Stockpile	Once per aggregate per year
Specific Gravity	AASHTO T 84 & T 85	Stockpile	Once per aggregate per year
Total Moisture in Aggregate	AASHTO T 255	Stockpile	One set per day's production
Free Water and Aggregate Wt.	N/A		One per day's production
% Entrained Air	AASHTO T 152	On Project	On first two loads and every third load thereafter provided consistent results are achieved
Compressive Strength	AASHTO T 22	On Project	One set per sublot
Compressive Strength	AASHTO T 22	On Project	One set per sublot

***Additional QC testing will be required any time a process change occurs during a placement, including changes in type or dosage of admixture. Additional testing shall include, but is not limited to, entrained air testing.**
****If the color produced is a laboratory designation Plate III, then the fine aggregate shall be tested once per month**

502.1702 Quality Control, Method C Remove this sub section and replace it with:

"**The Contractor shall submit a QCP listing the mix design(s) to be used, the name and location of the production facility, a brief description of the placement and curing process and the name and qualifications of any QCT to be used. When a hydration stabilizing admixture is proposed for use, the manufacturer, product name, dosage rate and discharge time, from the time cement is added to the aggregate, shall be included, as well as procedures for monitoring attainment of Accelerated Hydration Gain. A QCT will be required. The Contractor shall provide a Certificate of Compliance for each truckload of concrete to the Department at the time of the load placement**."

502.18, Method of Measurement, Revise Subsection 'F' by removing the word 'transverse' so that it reads: "**Saw cut grooving of concrete wearing surfaces, complete and accepted, will be measured for payment as one lump sum**."

502.19, Basis of Payment, Revise the third paragraph by removing the word 'transverse' so that it reads: "**Saw cut grooving of concrete wearing surfaces will be paid for at the Contract Lump Sum Price, which shall be payment for furnishing all materials, labor, and equipment, including depth gauges and all incidentals, to satisfactorily complete the work."**
(Also see 535.24 and 535.25 for related changes)

SECTION 503
REINFORCING STEEL

Section 503.07 Splicing Revise this section by removing the table and following footnote and replacing them with:

Minimum Lap Splice Length (inches)									
	Bar Size								
Bar Type	#3	#4	#5	#6	#7	#8	#9	#10	#11
Plain or Galvanized	16	20	24	29	38	47	59	72	85
Epoxy or Dual Coated	17	24	36	43	56	71	88	107	128
Stainless	19	24	30	36	47	59	73	89	107
Low-carbon Chromium	24	32	39	47	63	78	97	119	142

"**The minimum lap splice lengths in the table above are based on the parameters below. When any of these parameters are altered, appropriate minimum lap splice lengths will be as shown on the Plans.**

- **Normal weight concrete**
- **Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi**

- **Class B tension lap splice**
- **Minimum center-to-center spacing between bars of 6 inches**
- **Minimum clear cover of 2 inches**
- **Nominal reinforcing steel yield strengths**
  - **Low-carbon Chromium = 100 ksi**
  - **Stainless = 75 ksi**
  - **All others = 60 ksi**
- **Reinforcement with yield strengths greater than 75 ksi shall have beam transverse reinforcement and column ties provided over the required lap splice length in accordancewith the current edition of the AASHTO LRFD Bridge Design Specifications**

When lap splices are placed horizontally in an element where the concrete depth below the splice will be 12 inches, or more, the indicated lap splice lengths shall be multiplied by a factor of 1.3."

Amend the Paragraph starting with Welded Splices may be made…" by adding to the last sentence beginning so that it reads **"The Contractor shall submit complete details of their proposed method of making welded splices for the Resident's approval at least 10 days prior to use."**

504.12 Protective Coatings Revise this subsection by removing the paragraph beginning with "When galvanizing is specified" and replacing it with:

"**When galvanizing is specified, clean the steel in accordance with SSPC-SP 6 prior to galvanizing. Galvanize in accordance with AASHTO M 111 (ASTM A123). Galvanize fasteners in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Galvanized nuts shall be lubricated with a water-soluble lubricant containing a dye that contrasts with the color of the galvanizing.**"

SECTION 506
SHOP APPLIED PROTECTIVE COATING – STEEL

506.10 Description Revise this subsection by removing the entire paragraph in its entirety and replacing it with:

"This work shall consist of surface preparation and application of coating systems in accordance with the Plans and this Specification. The color of structural steel painted in its entirety shall comply with SAE AMS-STD-595 – Colors Used in Government Procurement Color No. 14272 (Green), unless otherwise specified in the Contract. The color of partially painted weathering steel shall comply with SAE AMS-STD-595 – Colors Used in Government Procurement Color No. 30045 (Brown), unless otherwise specified in the Contract. All other coating colors shall be as specified in the Contract."

506.13 Surface Preparation Amend this section by adding this paragraph to the end:

"**Steel shall meet the requirements of SSPC SP8 Pickling prior to being immersed in the zinc tanks. Verification of the surface preparation shall be included in the QC documentation**."

SECTION 518
STRUCTURAL CONCRETE REPAIR

518.02 Repair Materials Replace the paragraph beginning with "Where the depth of placement…" with the following:
"**Where the depth of placement is equal to or greater than 1 inch, the Contractor may use concrete as the repair material. When concrete is used, the coarse aggregate shall conform to the requirements of the table below and Standard Specification Section 703.02, Coarse Aggregate for Concrete, or 703.03, Combined Aggregate Grading for Concrete."**

Remove the second table with the heading, "Sieve Designation Percent by Weight Passing a Square Mesh Sieve"

SECTION 523
BEARINGS

523.051 Protective Coating Revise this subsection by removing the paragraph beginning with "Anchor rods shall be galvanized…" and replacing with:

"**Anchor rods shall be galvanized. When anchor rods are designated to secure bare unpainted steel or painted steel, a dielectric coating (epoxy or bituminous type coatings are acceptable) shall be applied to the anchor rod and/or adjacent steel to prevent contact between galvanized surfaces and painted or unpainted steel."**

523.22 Fabrication Amend this subsection by adding the following: "**Elastomeric Bearings shall be fabricated in accordance with AASHTO M251."**

SECTION 526
CONCRETE BARRIER

Amend this section by deleting it in its entirety and replacing it with:

"**526.01 Description This work shall consist of the furnishing, constructing, erecting, setting, resetting, and removal of concrete barrier and associated elements in accordance with these specifications, the Standard Details, and the lines and grades shown on the Plans or established by the Resident.**

The types of concrete barrier are designated as follows:

Portable Concrete Barrier Type I **Double faced removable barrier in accordance with the Standard Details.**

Permanent Concrete Barrier Type II **Double faced barrier as shown on the Plans.**

Permanent Concrete Barrier Type IIIa **Single faced barrier 32 inches high in accordance with the Standard Details or as shown on the Plans.**
Permanent Concrete Barrier Type IIIb **Single faced barrier 42 inches high in accordance with the Standard Details or as shown on the Plans.**

Permanent Concrete Transition Barrier **Barrier of various heights joining steel bridge rail to steel guardrail in accordance with the Standard Details or as shown on the Plans.**

Permanent Texas Classic Rail Barrier **Traffic rail or sidewalk rail, in accordance with the Standard Details or as shown on the Plans.**

526.02 Materials

a. Concrete **Concrete for barriers, both permanent and portable, shall have a design strength of 5,000 psi.**

For cast-in-place barrier: The concrete shall be Class LP, in accordance with Standard Specification Section 502, Structural Concrete.

For precast barrier: The concrete shall meet the requirements of Standard Specification 712.061, Structural Precast Concrete Units, except that the stripping strength for precast barriers is 4,000 psi.

b. Reinforcing Steel **Reinforcing steel shall meet the requirements of Section 503, Reinforcing Steel.**

c. Structural Steel **Plates and barrier connections shall meet the requirements specified in Standard Specification 504 - Structural Steel and shall be hot dip galvanized after fabrication in accordance with Standard Specification 506, Shop Applied Protective Coating – Steel**

d. Bolts Bolts shall meet the requirements specified in Section 713.02, High Strength Bolts.

e. Connecting Pins for Portable Concrete Barrier **Portable concrete barriers must be connected using a 1- inch diameter pin. The connecting pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A449 steel. Materials with greater strength may be used with the approval of the Department.**

f. Anchor Pins for Portable Concrete Barrier Anchoring to concrete or asphalt will be required when specified on the Plans. When required, portable concrete barriers must be anchored using a 1 ½ - inch diameter anchor pin. The anchor pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A36 steel. Materials with greater strength may be used with the approval of the Department.

g. Device Crashworthiness MaineDOT is transitioning to MASH2016 criteria for Portable Concrete Barrier on the following schedule:

New Portable Concrete Barrier shall be crash tested and/or evaluated to MASH2016 criteria.

Current Portable Concrete Barrier in useful serviceable condition that is successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Other current Portable Concrete Barrier that is deemed acceptable by the Department may be utilized on projects off the National Highway System through December 31, 2024.

526.03 Construction Requirements

Cast-in-place barriers shall be fabricated in accordance with Standard Specification Section 502, Structural Concrete. Precast barriers shall be fabricated in accordance with Standard Specification 534, Precast Structural Concrete.

Concrete finish for permanent barrier shall be rubbed as defined in Standard Specification Section 502, Structural Concrete, 502.13 D2 or an approved equal.

Portable concrete barrier shall be generally free from fins and porous areas and shall present a neat and uniform appearance.

Permanent barrier shall have a protective coating applied in accordance with Standard Specification Section 515, Protective Coating for Concrete Surfaces.

Reflective delineators for concrete median barrier shall meet the requirements of Special Provision 645, Highway Signing.

Preformed Joint Filler shall meet the requirements specified in Subsection 705.01, Preformed Expansion Joint Filler.

Permissible dimensional tolerances for all concrete barriers shall be as follows:

a. Cross-sectional dimensions shall not vary from design dimensions by more than ¼ inch. The vertical centerline shall not be out of plumb by more than ¼ inch.

b. Longitudinal dimensions shall not vary from the design dimensions by more than ¼ inch per 10 feet of barrier section and shall not exceed ¾ inches per section.

c. Location of anchoring holes shall not vary by more than ½ inch from the dimensions shown in the concrete barrier details on the Plans.

d. Surface straightness shall not vary more than ¼ inch under a 10-foot straightedge.

e. The barrier shall have no significant cracking. Significant cracking is defined as fractures or cracks passing through the section, or any continuous crack extending for a length of 12 inches or more, regardless of position in the section.

526.04 Method of Measurement Permanent Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be measured for payment by lump sum, complete in place.

Portable concrete barrier, both anchored and unanchored will be measured for payment by lump sum. Lump sum measurement will include verification of the installation and removal of all portable concrete at the completion of the Contractor's operations.

The Contractor shall replace sections of portable concrete barrier, including anchored barrier damaged by the traveling public when directed by the Resident. Replacement sections will be measured for payment in accordance with Standard Specification 109.7, Equitable Adjustments to Compensation and Time.

Transition barrier will be measured by each, complete in place.

526.05 Basis of Payment The accepted quantities of Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be paid for at the Contract lump sum price for the type specified, complete in place.

The accepted quantities of Portable Concrete Barrier Type I, both anchored and unanchored will be paid for at the Contract lump sum price. Such payment shall be full compensation for furnishing all materials, assembling, moving, resetting, transporting, temporarily storing, removing barrier, furnishing new parts as necessary, and all incidentals necessary to complete the work.

Portable barrier shall become the property of the Contractor upon completion of the use of the barrier on the project and shall be removed from the project site by the Contractor.

Transition barrier will be paid for at the Contract price each, complete in place.

The accepted quantity of all types of concrete barrier, whether portable or permanent, will be paid for at the lump sum or per each price, as applicable, which payment shall be full compensation for all materials, including reinforcing steel, protective coating, reflective

delineators, steel plates and hardware, equipment, labor and incidentals required, as necessary, to complete the work.

Payment will be made under:

	Pay Item	**Pay Unit**
526.301	**Portable Concrete Barrier, Type I**	**Lump Sum**
526.304	**Portable Concrete Barrier, Anchored Type I**	**Lump Sum**
526.312	**Permanent Concrete Barrier Type II**	**Lump Sum**
526.321	**Permanent Concrete Barrier Type IIIa**	**Lump Sum**
526.323	**Texas Classic Rail**	**Lump Sum**
526.331	**Permanent Concrete Barrier Type IIIb**	**Lump Sum**
526.34	**Permanent Concrete Transition Barrier**	**Each**
526.502	**Precast Concrete Median Barrier**	**Lump Sum**"

SECTION 527
ENERGY ABSORBING UNIT

527.02 Materials Amend this section by deleting it in its entirety and replacing it with:

"**MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Portable Crash Cushions will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Work Zone Crash Cushions shall be selected from the Department's Qualified Products List of Crash Cushions/Impact Attenuators or approved equal."

SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.02 Materials Replace the description of "Coarse Aggregate for Concrete (Class A, AA, or Latex) in its entirety with: "**Coarse Aggregate for Concrete (Class A, AA, or SP-1-7)"**

535.22 Tolerances Amend this section by deleting it in its entirety and replacing it with:
"**Product dimensional tolerances shall be in conformance with the latest edition of PCI MNL-135, Tolerance Manual for Precast and Prestressed Concrete Construction, as applicable to the particular product (e.g., slab, I-girder, box beam), the Plans, and this Specification. Use Box**

Beam fabrication tolerances for voided or solid slab beams and use Double Tee tolerances for NEXT beams. In case of dispute, the Fabrication Engineer shall determine the allowable tolerance."

535.24 Installation of Slabs, Beams, and Girders Revise the 5th paragraph by replacing "6.0 and 9.0" to "5.0 and 8.0" so it reads: **"Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements."**

535.25, Installation of Precast/Prestressed Deck Panels Revise the 2nd paragraph by replacing "6.0 and 9.0" to "5.0 and 8.0" so it reads: **"Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements."**

SECTION 606
GUARDRAIL

Amend this section by replacing it with the following:

606.01 Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. Guardrail is designated as:

31" W-Beam Guardrail - Mid-Way Splice
Galvanized steel w-beam, 8" wood or composite offset blocks, galvanized steel posts
Thrie Beam
Galvanized steel thrie beam, 8" wood or composite offset blocks, galvanized steel posts

Median guardrail shall consist of two beams of the above types, mounted on single posts.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing end post as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

606.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be “U” channel steel, 8 ft long, 2 ½ lb/ft minimum and have 3/8-inch round holes, 1-inch center to center for a minimum distance of 2 ft from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared guardrail terminal end point and tangent point, both at the leading and trailing ends of each run of guardrail. The marker’s flexible posts shall be gray with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the guardrail terminal is not flared, markers will only be required at the terminal end point. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the Department’s Qualified Products List of Delineators. The marker shall be gray, flexible, durable, and of a non-discoloring material to which 3-inch by 9-inch reflectors shall be applied, and capable of recovering from repeated impacts and meeting MASH 16 requirements. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail reflectors shall be mounted on all “w” beam guardrail and shall be either the “butterfly” type or linear delineation system panels. “Butterfly” or linear delineation panels shall be installed at approximately 62.5 foot intervals on tangents (after every tenth post) and 31.25 feet on curves (after every fifth post), and shall be centered on the guardrail beam. On Divided highways, the left-hand delineators shall be yellow and the right-hand delineators shall be silver/ white. On two-way directional highways, the right-hand side will have silver / white reflectors and no reflectorized delineator used on the left. Delineators shall have reflective sheeting that meets or exceeds the requirements of Section 719.01.

“Butterfly” reflectors shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Aluminum, galvanized metal or other materials shall not be used. Reflective sheeting will be applied to only one side of the delineator facing the direction of traffic and shall be centered vertically on the guardrail beam as shown in the Standard Detail 606(7).

Linear delineation system panels shall be 1.5 inches wide by approximately 11 inches nominal length, with a minimum of 5 raised lateral ridges spaced at approximately 2.25 inches. The height of each ridge shall be 0.34 inches with a 45 degree profile and a 0.28 inches radius at the top. Sheeting shall be laminated to thin gauge aluminum with a pre-applied adhesive tape on the back. Panels shall not be installed over seams or bolt heads and shall be centered horizontally on the guardrail beam; linear delineation panels shall be attached to only one guardrail beam. The guardrail beam surface shall be cleaned and prepared according to the manufacturer’s instructions. Air temperature and guardrail surface temperature must be a minimum of 50 degrees F (10 C) with rising temperature at the time of installation.

Exact locations of the either the “butterfly” type or the linear delineation panels shall be approved by the Resident prior to installation.

Single wood post shall be of cedar, white oak, or tamarack, well-seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed, and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department’s Qualified Products List and shall be MASH 16 tested and approved.

Flared and Tangent w-beam guardrail terminals and guardrail offset blocks shall be from the Department’s Qualified Products List. Flared terminals shall be installed with a 4 ft offset as shown in the Manufacturer’s installation instructions.

Anchorage assemblies used to anchor trailing ends, radius guardrail, or other ends not exposed to traffic shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report, Drawing SEW02a.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven

through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.04 Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than ½ inch. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.045 Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

606.05 Shoulder Widening At designated locations the existing shoulder of the roadway shall be widened as shown on the plans. All grading, paving, seeding, and other necessary work shall be in accordance with the Specifications for the type work being done.

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in

accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

606.07 Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

606.08 Method of Measurement Guardrail will be measured by the linear foot from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans. When connected to radius rail, measurement will be to the end of the last tangent beam.

Guardrail terminal, reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Widened shoulder will be measured as a unit of grading within the limits shown on the plans.

Excavation in solid rock for placement of posts will be paid under force account unless otherwise indicated in the Bid Documents.

Reflectorized beam guardrail reflectors (“butterfly” type or linear delineation system panels) when identified by pay item, will be measured for payment by each.

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly but will be considered incidental to guardrail items. Reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be paid for at the contract unit price each for the kind specified complete in place.
Guardrail terminals will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer’s installation instructions. Pay limits for a flared terminal will be 37.5 feet. Pay limits for a tangent terminal will be 50 feet. Each guardrail terminal will be clearly marked with the Manufacturer’s name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail terminals shall also include a set of installation drawings supplied to the Resident.

Anchorages to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 150 ft or less will be paid for under the designated radius pay item for the type guardrail being placed.

Widened shoulder will be paid for at the contract unit price each complete in place and will be full compensation for furnishing and placing, grading and compaction of aggregate subbase and any required fill material.

Adjust guardrail will be paid for at the contract unit price per linear foot and will be full compensation for adjusting to grade. Payment shall also include adjusting guardrail terminals where required.

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

Remove and Reset guardrail will be paid for at the contract unit price per linear foot and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals when required.

Remove, Modify, and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition and vertical curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

Reflectorized beam guardrail reflectors (“butterfly” type and the linear delineation panels) will not be paid for directly but will be considered incidental to all new guardrail items. The Contractor shall

furnish and install either the “butterfly” type or linear delineation panels, at its discretion, for new guardrail items.

Reflectorized beam guardrail reflectors (either “butterfly” type or linear delineation system panels) will be paid for under the applicable pay items for installation in conjunction with Adjust, Modify, Remove and Reset, Remove Modify and Reset guardrail items. The accepted quantity of “butterfly” type or linear delineation system panels will be paid for at the contract unit price each for all work and materials furnished to install, complete in place, including all incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
606.1301	31” W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302	31” W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303	31” W-Beam Guardrail - Mid-Way Splice, 15’ Radius and Less	Linear Foot
606.1304	31” W-Beam Guardrail - Mid-Way Splice, Over 15’ Radius	Linear Foot
606.1305	31” W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306	31” W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each
606.1307	Bridge Transition (Asymmetrical) – Type IA	Each
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	Linear Foot
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.259	Anchorage Assembly	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.352	Reflectorized Beam Guardrail Delineators (“Butterfly” type)	Each
606.3521	Linear Delineation System Panel	Each
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356	Underdrain Delineator Post	Each
606.358	Guardrail, Modify	Linear Foot
606.362	Guardrail, Adjust	Linear Foot
606.365	Guardrail, Remove, Modify, and Reset	Linear Foot
606.366	Guardrail, Remove and Reset	Linear Foot
606.367	Replace Unusable Existing Guardrail Posts	Each
606.3671	Replace Unusable Offset Blocks	Each
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each

606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.568	Guardrail, Modify - Double Rail	Linear Foot
606.63	Thrie Beam Rail Beam	Linear Foot
606.64	Guardrail Thrie Beam - Double Rail	Linear Foot
606.65	Guardrail Thrie Beam - Single Rail	Linear Foot
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72	Guardrail Thrie Beam - over 15 ft radius	Linear Foot
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

SECTION 608
SIDEWALKS

Section 608.022Detectable Warning Materials Standard Revise this section by removing the last sentence of this section beginning with "Concrete…" and replacing it with "**Concrete shall meet the requirements of Section 608.021, Sidewalk Materials, of this specification or may be a prepackaged concrete mix from the Department's Qualified Products List (QPL).**"

SECTION 609
CURB

Remove this section in its entirety and replace with the following:

609.01 Description Construct or reset curb, gutter, or combination curb and gutter, paved ditch, and paved flume. The types of curb are designated as follows:

Type 1 - Stone curbing of quarried granite stone
Type 2 – Concrete Curbing
Type 3 - Bituminous curbing
Type 5 - Stone edging of quarried granite stone

609.02 Materials Except as provided below, the materials used shall meet the requirements of the following Sections of Division 700 - Materials:

Portland Cement and Portland Pozzolan Cement	701.01
Water	701.02
Air Entraining Chemical Admixture	701.03
Fine Aggregate for Concrete	703.01

Coarse Aggregate for Concrete	703.02
Joint Mortar	705.02
Reinforcing Steel	709.01
Stone Curbing and Edging	712.04
Epoxy Resin	712.35
Hot Mix Asphalt Curbing	712.36
Structural Precast Concrete Units (Concrete Curb)	712.061

The Contractor shall submit a concrete mix design for the Portland Cement Concrete to the Resident, for the uses specified below or in accordance with the Contract Documents.

Circular curb, terminal sections and transition sections shall be in reasonably close conformity with the shape and dimensions shown on the Plans and to the applicable material requirements herein for the type of curb specified.

Dowels shall be reinforcing steel deformed bars.

Concrete for Slipform Concrete Curb shall meet the requirements below:

a. Class A, with the exception that permeability requirements shall be waived.
b. Entrained air content of Slipform Concrete Curb shall be 4.0% to 7.0%
c. Concrete temperature, prior to discharge, shall not exceed 90 F.
d. Proposed mix designs may contain polypropylene fibers.
e. Partially discharged loads may be retempered with water provided the maximum water to cement ratio is not exceeded.

609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections

a. Installation The curb stone shall be set on a compacted foundation so that the front top arris line conforms to the lines and grades required. The foundation shall be prepared in advance of setting the stone by grading the proper elevation and shaping to conform as closely as possible to the shape of the bottom of the stone. The required spacing between stones shall be assured by the use of an approved spacing device to provide an open joint between stones of at least ¼ inch and no greater than ⅝ inch.

b. Backfilling All remaining spaces under the curb shall be filled with approved material and thoroughly hand tamped so the stones will have a firm uniform bearing on the foundation for the entire length and width. Any remaining excavated areas surrounding the curb shall be filled to the required grade with approved materials. This material shall be placed in layers not exceeding 8 inches in depth, loose measure and thoroughly tamped.

When backfill material infiltrates through the joints between the stones, small amounts of joint mortar or other approved material shall be placed in the back portion of the joint to prevent such infiltrating.

c. Protection The curb shall be protected and kept in good condition. All exposed surfaces smeared or discolored shall be cleaned and restored to a satisfactory condition or the curb stone removed and replaced.

d. Curb Inlets Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout as shown in the Standard Details.

The epoxy grout shall be used in accordance with the manufacturer's instructions. The grout shall be forced into the hole, after which the dowel shall be coated with grout for one-half its length and inserted into the grout filled hole. The hole shall be completely filled with grout around the dowel. All tools and containers must be clean before using.

The Contractor may elect to substitute concrete to backfill Stone Curbing or Stone Edging at their option. If the concrete backfill option is elected, the Concrete Fill shall meet the requirements of 609.02. The Contractor shall submit a concrete design for the Portland Cement Concrete, with a minimum designated compressive strength of 3000 PSI meeting the requirements of Class S or Class Fill Concrete. The Contractor may elect to choose a Prepackaged Concrete Mix from the Departments Qualified Products list (QPL). Concrete backfill shall be completed in conformance with a Department supplied concrete backfill detail.

609.04 Bituminous Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. String or chalk lines shall be positioned on the prepared base to provide guidelines. The foundation shall be uniformly painted with tack coat at a rate of 0.04 to 0.14 gal/yd^2.

b. Placing The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Resident may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced by the machine.

c. When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed with bituminous sealing compound.

d. Acceptance Curb may be accepted or rejected based on appearance concerning texture, alignment, or both. All damaged curb shall be removed and replaced at the Contractor's expense.

e. Polyester fibers shall be uniformly incorporated into the dry mix at a rate of 0.25 percent of the total batch weight. Certification shall be provided from the supplier with each shipment meeting the following requirements:

Average Length	0.25 inches ± 0.005
Average Diameter	0.0008 inches ± 0.0001
Specific Gravity	1.32-1.40
Melting Temperature	480 °F Minimum

609.05 Slipform Concrete Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. The Contractor shall not place Slipform Concrete Curb on a wet or frozen foundation. The foundation (HMA or concrete) may be in a Saturated Surface Dry condition, but no standing water shall be allowed. String or chalk lines shall be positioned on the prepared foundation to provide guidelines. Prior to placing the curb, the foundation shall be uniformly coated with an epoxy resin adhesive that meets the requirements of AASHTO M 235, Type I, II, III, IV or V and has been tested by AASHTO Product Evaluation & Audit Solutions. The Contractor shall submit the epoxy resin adhesive that they propose to utilize with the concrete mix design. The epoxy resin adhesive must be approved prior to placement and used in accordance with manufacturer's recommendations.

b. Placing Concrete shall be placed with an approved Slipform machine that will produce a finished product according to the design specified in the Plans. For cold weather slip forming, the outside temperature must be at least 36°F and rising. The curb shall be placed on a firm, uniform foundation, shall conform to the section profile specified in the Plans, and shall match the appropriate grade. Expansion joints shall be placed in the curb where it meets rigid structures such as but not limited to building foundations, catch basin headers or fire hydrants. Contraction joints will be placed at 10-foot intervals using sawing methods, which shall cut 1 to 3 inches into the concrete. Contraction joints shall be cut between 1 and 7 days after placement of the concrete. Joints shall be constructed perpendicular to the subgrade and match other joints in roadways, sidewalks, or other structures when applicable.

c. Curing and Sealing Proper curing shall be provided using either a combination curing/sealing compound spray that meets ASTM 1315 Type 1-Class A, or a curing compound spray that meets ASTM 309 Type 1-D – Class A. Curing may also be accomplished by the methods specified in Standard Specification Section 502.14, Curing Concrete.

If a combination curing/sealing compound spray is not used, a separate sealing compound from the MaineDOT Qualified Products List for a Type 1c sealer shall be applied after the concrete has cured.

d. Protection Slipform curb must be adequately protected after placement. The concrete shall be allowed to cure for at least 72 hours. During cold weather conditions, when temperatures drop below the required temperature of 36°F after placement, curbing shall be protected by concrete blankets or a combination of plastic sheeting and straw. After any

placement of Slipform curb, regardless of weather conditions, the placed curb shall be adequately protected by traffic control devices as necessary.

e. Marking When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed unless a combination curing/sealing compound is used.

f. Acceptance Curb shall be accepted or rejected based on finish, alignment, entrained air content, and compressive strength. Concrete Quality Control and Acceptance shall be done in accordance with Standard Specification Section 502, Method C. All damaged curb shall be removed and replaced at the Contractor's expense.

609.06 Stone Edging The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Slope The edging shall be set on a slope as shown on the Plans or as directed.

b. Joints Joints shall be open and not greater than 1½ inch in width.

609.07 Stone Bridge Curb

a. Installation Each stone and the bed upon which it is to be placed shall be cleaned and thoroughly wetted with water before placing the mortar for bedding and setting the stone. The stone shall be set on a fresh bed of joint mortar and well bedded before the mortar has set so that the front top arris line conforms to the line and grade required. Whenever temporary supporting wedges or other devices are used in setting the stones, they shall be removed before the mortar in the bed has become set, and the holes left by them shall be filled with mortar. Concrete behind the stones shall not be placed until the stones have been in place at least two days. Bedding and pointing mortar for joints shall be cured as required under Section 502 - Structural Concrete.

b. Joints Vertical joints shall be ½ inch in width plus or minus ⅛ inch. Whenever possible, the face and top of the joint shall be pointed with joint mortar to a depth of 1½ inch, before the bedding mortar has set. Joints which cannot be so pointed, shall be prepared for pointing by raking them to a depth of 1½ inch before the mortar has set. Joints not pointed at the time the stone is laid shall be thoroughly wetted with clean water and filled with mortar. The mortar shall be well driven into the joint and finished with an approved pointing tool, flush with the pitch line of the stones.

609.08 Resetting Stone or Portland Cement Concrete Curb, Including Terminal Sections and Transitions

The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Removal of Curbing The Contractor shall carefully remove and store curb specified on the Plans or designated for resetting. Curb damaged or destroyed, because of the

Contractor's operations or because of their failure to store and protect it in a manner that would prevent its loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

b. Cutting and Fitting Cutting or fitting necessary in order to install the curbing at the locations directed shall be done by the Contractor.

609.09 Method of Measurement Curb, both new and reset, will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted. Curb inlets at catch basins, including doweling, will not be measured for payment but shall be considered included in the cost of the catch basin. New transition sections and terminal curb will be measured by the unit. Reset transition sections and terminal curb will be included in the measurement for resetting curb.

Concrete Slipform Curb and terminal ends will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted.

609.10 Basis of Payment The accepted quantities of curbing will be paid for at the contract unit price per linear foot for each kind and type of curbing as specified.

Payment for terminal curb shall include only that portion of the curbing modified for installation at ends of curb runs shown in the Standard Details. Curb adjacent to terminal ends shall be paid for at the contract unit price per linear foot for the type of curb installed.

Vertical Curb Type 1 is required to have a radius of 60 feet or less, will be paid for as Vertical Curb Type 1 - Circular.

Curb, Type 5 required to have a radius of 30 feet or less will be paid for as Curb Type 5 - Circular.

There will be no separate payment for concrete fill, mortar, reinforcing steel, anchors, tack coat, drilling for and grouting anchors, pointing and bedding of curbing, and for cutting and fitting, but these will be considered included in the work of the related curb.

Removal of existing curb and necessary excavation for installing new or reset curbing will not be paid for directly but shall be considered to be included in the appropriate new or reset curb pay item. Base and Subbase material will be paid for under Section 304 - Aggregate Base and Subbase Course. Backing up bituminous curb is incidental to the curb items. Loam, as directed, will be paid under 615 – Loam.

Payment will be made under:

	Pay Item	Pay Unit
609.11	Vertical Curb Type 1	Linear Foot
609.12	Vertical Curb Type 1 - Circular	Linear Foot
609.13	Vertical Bridge Curb Type 1	Linear Foot
609.131	Vertical Bridge Curb Type 1A	Linear Foot
609.132	Vertical Bridge Curb Type 1B	Linear Foot
609.142	Vertical Bridge Curb Type 1B - Circular	Linear Foot
609.15	Sloped Curb Type 1	Linear Foot
609.151	Sloped Curb Type 1 - Circular	Linear Foot
609.161	Concrete Slipform Curb – Vertical Type 2	Linear Foot
609.21	Concrete Slipform Curb Type 2	Linear Foot
609.219	Concrete Slipform Terminal End Type 2	Linear Foot
609.23	Terminal Curb Type 1	Each
609.234	Terminal Curb Type 1 - 4 foot	Each
609.237	Terminal Curb Type 1 - 7 foot	Each
609.2371	Terminal Curb Type 1 - 7 foot – Circular	Each
609.238	Terminal Curb Type 1 - 8 foot	Each
609.26	Curb Transition Section B Type 1	Each
609.31	Curb Type 3	Linear Foot
609.34	Curb Type 5	Linear Foot
609.35	Curb-Type 5 - Circular	Linear Foot
609.38	Reset Curb Type 1	Linear Foot
609.39	Reset Curb Type 2	Linear Foot
609.40	Reset Curb Type 5	Linear Foot

SECTION 610
STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

610.02 Materials Amend this subsection by adding the following to the end of the material list:
"**Stone Ditch Protection 703.29"**

SECTION 618
SEEDING

618.08 Mulching Revise this Section so that the third sentence reads: "Mulch for Seeding Method Number 1 shall only be cellulous fiber mulch Section 619.04 **(b)** or straw mulch Section 619.04 (**a**)."

SECTION 619
MULCH

619.03 General Amend this Section by adding the following sentence to the end: **"Straw mulch shall be used in all wetland areas."**

SECTION 626
FOUNDATIONS, CONDUIT, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS

Section 626.021 Miscellaneous Materials Revise this section by removing the fourth paragraph beginning with " All Concrete for concrete encasement…" and replace it with "**All concrete for concrete encasement of conduit shall be Class S or Class Fill concrete in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department's Qualified Products List (QPL).**"

Section 626.031Conduit Revise the fifth paragraph beginning with "After the trench has been…" by removing the last sentence beginning with "Where concrete encasement…" and replacing it with **"Where concrete encasement is required around the conduit, the concrete shall meet Class S, Class Fill in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department's Qualified Products List (QPL)."**

626.034 Concrete Foundations Revise this Section by changing '626.037' to '**626.036**' in the Second Paragraph which begins with "Foundations shall consist of cast-in-place…".

Revise the 10th paragraph beginning with "Before placing concrete, the required elbows…" by removing "…**in accordance with Standard Specification 633**."

626.036 Precast Foundations Revise the last sentence of paragraph one so that it reads: "**Construction of precast foundations shall conform to the Standard Details and all requirements of 712.061**."

SECTION 627
PAVEMENT MARKINGS

627.02 Materials Amend this section by adding the following to the existing Specification:

"When pavement marking paint must be applied on pavement with an air temperature between 35 ºF and 50 ºF, a low temperature waterborne paint may be used upon the Department's approval as noted below.

The Contractor shall submit the following information for Department review and approval at least 10 calendar days prior to application:

The manufacturer and product name of the low temperature waterborne paint

The manufacturer's technical product data sheets

The product's SDS sheets

All required and recommended application specifications for the product

The manufacturer's requirements for temperature, surface preparation, paint thickness and the bead application shall be followed. No additional payment will be made for the use of low temperature waterborne paint. "

627.06 Application Revise this subsection by replacing the paragraph beginning with " On other final pavement markings…" with the following:
"On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be one uniform covering coat at least 16 mils thick. Before the paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.

Painted lines and markings shall be applied in accordance with the manufacturer's published recommendations. These recommendations will be supplied to the Resident prior to installation."

Revise this subsection by replacing the paragraph beginning with " If the final reflectivety values are less…" with the following:

"The final reflectivity will be acceptable if 90 percent or more of the painted pavement lines and markings meet the specified minimum value. If less than 90 percent of the painted pavement lines and markings meet the specified minimum final reflectivity values, the Contractor shall repaint those areas not meeting required reflectivity at no cost to the Department.

If, after repainting, analysis of the final reflectivity values results in the need for a second repainting, the Contractor will submit in writing a plan of action to meet the reflectivity minimums prior to continuing any work. Once the plan has been reviewed and approved by the Department, the Contractor shall reapply at no cost to the Department."

SECTION 634
HIGHWAY LIGHTING

634.021 Materials Revise this subsection by removing the paragraph beginning with "All bolts for mounting lighting fixtures" and replacing with:

"**All bolts for mounting lighting fixtures under bridge structures shall conform to the requirements of ASTM A307. These bolts and other fastening hardware shall be galvanized in**

accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."

SECTION 637
DUST CONTROL

Revise this section by removing it in its entirety.

SECTION 643
TRAFFIC SIGNALS

643.021 Materials Amend this subsection by adding the following at the end:

"**MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Temporary Traffic Control Signals will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029."

643.023 Traffic Signal Structures Remove the third paragraph and replace it with the following:

"**Traffic signal support structures shall be classified as Fatigue Category III if they are located on roads with a speed limit of 35 mph or less, Fatigue Category II if they are located on roads with a speed limit of greater than 35 mph, and Fatigue Category I if noted on the Contract Plans. Fatigue Importance Factors shall be as specified in Table 11.6-1 (Fatigue Importance Factors). Fatigue analyses are not required for span-wire (strain) pole traffic signal support structures with heights of 55 feet or less unless required by the current edition of AASHTO "LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals".**

643.09 Service Connection Revise this subsection by removing the paragraph that begins with "Traffic signal services shall have…".

And by removing the paragraphs beginning with " A service ground rod shall be installed…" and "A total of 4, 10' service…" and replace them with "**A total of 4, 10' service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an**

exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet".

SECTION 645
HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter "c.", revise the fifth paragraph beginning with "In addition to the required details…" by removing the words "**and foundation**" from the 5th sentence.

Section 645.08 Method of Measurement. Revise the second paragraph beginning with "Bridge-type, cantilever and…" by removing the words "**including the foundation**" .

Section 645.09 Basis of Payment. Revise the third paragraph beginning with "The accepted bridge-type, cantilever and…" by removing the word "**foundation**" from the second sentence. Add the following sentence to the end of the paragraph "**Conduits, Junction Boxes, and Foundations will be paid for under Section 626.**"

SECTION 652
MAINTENANCE OF TRAFFIC

652.2.5 Portable Changeable Message Sign Revise the fifth paragraph so it reads:

"The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign. The control system shall be capable of maintaining memory when power is unavailable. Messages must be changeable with either a portable electronic device like a notebook computer or an on-board keypad. The controller shall have the capability to store a minimum of 200 user-defined and 200 pre-programmed messages. Controller and battery compartments shall be enclosed in lockable, weather-tight boxes. The cabinet shall be locked at all times that the Contractor is not actively changing the message. The Contractor shall change the password for the controller prior to stationing the PCMS and shall provide the password to the Resident. The password shall be unique per PCMS and secure and shall not be written anywhere in, on, around, or stored in the PCMS."
Amend this Section by adding the following new subsection:

"**652.2.6 Device Crashworthiness MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:**

Category 1 (Cones, Drums, Tubular Markers, Flexible Delineators, and similar devices that have little chance if causing windshield penetration, tire damage, or other significant effect on the control or trajectory of a vehicle) – All Category 1 devices will be manufacturer self-certified as MASH2016 by January 1, 2025. Current Category 1 devices in useful serviceable condition that are not self-certified as MASH2016 compliant may be utilized through December 31, 2024.

Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.

Category 3 (Portable Concrete Barrier, Portable Crash Cushions, Truck Mounted Attenuators, Category 2 devices weighing more than 100 pounds, and similar devices that are expected to produce significant vehicular velocity change or other harmful reactions) – All Category 3 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029. (See Standard Specification 526 for additional Portable Concrete Barrier information).

Category 4 (Trailer Mounted Devices: Arrow Boards, Temporary Traffic Control Signals, Area Lighting, Portable Changeable Message Sign, and other similar devices.) – All Category 4 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029."

652.3.3 Submittal of Traffic Control Plan Amend this section by adding:

"n. A security plan for any PCMS shall be included. The Contractor shall provide a plan for secure access to the PCMS and protection from unauthorized users. The plan shall have details on securing the cabinets via a lock and password from unauthorized users, password changing protocols, and where the access information will be kept so it can be used in the event of emergency. The Contractor shall not Identify or store passwords in the TCP."

652.4 Flaggers Revise the first paragraph of this section so that it reads:

"The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer."

SECTION 681
PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL

681.08 Basis of Payment Amend this section by adding the Item Number "**681.10**' in front of the item "Precast Aggregate-Filled Concrete Block Gravity Wall" at the end of the section.

SECTION 701
STRUCTURAL CONCRETE RELATED MATERIAL

701.01 Portland Cement and Portland Pozzolan Cement Amend the first sentence of Paragraph 3 by adding "**or Type 1L Portland Limestone cement**" so that it reads:
"**A Type IP (MS) Portland-pozzolan cement (blended hydraulic cement with moderate sulfate resistance) or Type 1L Portland Limestone cement meeting the requirements of AASHTO M 240, may be used instead of Type II or where Type I Portland cement, meeting the requirements of AASHTO M 85, is allowed**."

SECTION 703
AGGREGATES

Add the following to Section 703 - Aggregates

703.01 Fine Aggregate for Concrete Fine aggregate for concrete shall consist of natural sand or, when approved by the Resident, other inert materials with similar characteristics or combinations thereof, having strong, durable particles. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix without permission of the Resident.

All fine aggregate shall be free from injurious amounts of organic impurities. Should the fine aggregate, when subjected to the colorimetric test for organic impurities, AASHTO T 21, produce a color darker than the reference standard color solution (laboratory designation Plate III), the fine aggregate shall be rejected.

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.
Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

The fineness modulus shall not be less than 2.26 or more than 3.14. If this value is exceeded, the fine aggregate will be rejected unless suitable adjustments are made in proportions of coarse and fine aggregate. The fineness modulus of fine aggregate shall be determined by adding the cumulative percentages of material by weight retained on the following sieves: Nos. 4, 8, 16, 30, 50, 100 and dividing by 100.

Fine aggregate, from an individual source when tested for absorption as specified in AASHTO T 84, shall show an absorption of not more than 2.3 percent.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0

703.02 Coarse Aggregate for Concrete Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the ⅜ inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

The coarse aggregate from an individual source shall have an absorption no greater than 2.0 percent by weight determined in accordance with AASHTO T 85 modified for weight of sample.

The composite blend shall have a Micro-Deval value of 18.0 percent or less as determined by AASHTO T 327 or not exceed 40 percent loss as determined by AASHTO T 96.

Coarse aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

Coarse aggregate shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
Grading	S	A	AA	SP-1-7	SP-1-78	SP-2-8	SP-2-89
Aggregate Size	1 ½ inch	1 inch	¾ inch	½ inch	½ inch	⅜ inch	⅜ inch
2 inch	100						
1 ½ inch	95-100	100					
1 inch	-	95-100	100				
¾ inch	35-70	-	90-100	100	100		
½ inch	-	25-60	-	90-100	90-100	100	100
⅜ inch	10-30	-	20-55	40-70	40-75	85-100	90-100
No. 4	0-5	0-10	0-10	0-15	5-25	10-30	20-55
No. 8	-	0-5	0-5	0-5	0-10	0-10	5-30
No. 16	-	-	-	-	0-5	0-5	0-10
No. 50	-	-	-	-	-	-	0-5
No. 200*	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5

*This limit will be 0-2.0 for Department production samples. Yearly quality samples will be held to 0-1.5.

703.0201 Alkali Silica Reactive Aggregates All coarse and fine aggregates proposed for use in concrete shall be tested for Alkali Silica Reactivity (ASR) potential under AASHTO T 303 (ASTM C 1260), Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction, prior to being accepted for use. Acceptance will be based on testing performed by an accredited independent lab submitted to the Department. Aggregate submittals will be required on a 5-year cycle, unless the source or character of the aggregate in question has changed within 5 years from the last test date.

As per AASHTO T 303 (ASTM C 1260): Use of a particular coarse or fine aggregate will be allowed with no restrictions when the mortar bars made with this aggregate expand less than or equal to 0.10 percent at 30 days from casting. Use of a particular coarse or fine aggregate will be classified as potentially reactive when the mortar bars made with this aggregate expand greater than 0.10 percent at 30 days from casting. Use of this aggregate will only be allowed with the use of cement-pozzolan blends and/or chemical admixtures that result in mortar bar expansion of less than 0.10 percent at 30 days from casting as tested under ASTM C 1567.

Acceptable pozzolans and chemical admixtures that may be used when an aggregate is classified as potentially reactive include, but are not limited to the following:

a. Class F Coal Fly Ash meeting the requirements of AASHTO M 295
b. Ground Granulated Blast Furnace Slag (Grade 100 or 120) meeting the requirements of AASHTO M 302
c. Densified Silica Fume meeting the requirements of AASHTO M 307
d. Lithium-based admixtures
e. Metakaolin

Pozzolans or chemical admixtures required to offset the effects of potentially reactive aggregates will be incorporated into the concrete at no additional cost to the Department.

Amend this section by adding the new sub section:

"703.03 Combined Aggregate Grading for Concrete The combined gradation of the fine and coarse aggregates when mathematically blended using the mix design percentages shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
Grading	S	A	AA	SP-1-7	SP-1-78	SP-2-8	SP-2-89
Aggregate Size	1½ inch	1 inch	¾ inch	½ inch	½ inch	⅜ inch	⅜ inch
2 inch	100						
1½ inch	95–100	100					
1 inch	80–100	95–100	100				
¾ inch	55–90	90–100	93–100	100	100		
½ inch	45–80	55–80	60–90	90–100	90–100	100	100
⅜ inch	40–65	40–65	50–80	55–85	65–90	90–100	90–100
No. 4	35–55	35–55	35–60	30–60	40–70	45–75	50–80
No. 8	25–53	28–50	30–55	25–55	30–65	35–65	35–75
No. 16	15–40	18–45	19–45	18–50	20–55	20–55	20–55
No. 30	7–30	9–30	10–33	8–32	10–38	10–38	10–40
No. 50	3–14	4–14	4–16	3–16	4–20	4–20	4–20
No. 100	0–6	0–6	0–6	0–6	0–7	0–8	0–8
No. 200	0–3.5*	0–3.5*	0–3.5*	0–3.5*	0–3.5*	0–3.5*	0–3.5*

***The percent passing the No. 200 sieve shall not exceed 6.0 percent for any fine aggregate. The percent passing the No. 200 sieve shall not exceed 2.0 percent for any single coarse aggregate. The percent passing the No. 200 sieve shall not exceed 4.0 percent for the combined gradation of self-consolidating concrete (SCC) mix designs."**

703.05 Aggregate for Sand Leveling Aggregate for sand leveling shall be sand of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The aggregate shall meet the grading requirements of the following table.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro- Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the ½ in sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected.
The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

Recycled Asphalt Pavement (RAP) shall not be used for or blended with aggregate base or subbase.

a. Aggregate for base, Type A and B shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type A	Type B
½ inch	45-70	35-75
¼ inch	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

At least 50 percent by weight of the material retained on the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

Type A aggregate for base shall only contain particles of rock that will pass the 2 inch square mesh sieve.

Type B aggregate for base shall only contain particles of rock that will pass the 4 inch square mesh sieve.

b. Aggregate for base, Type C shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
	Type C
4 inches	100
3 inches	90-100
2 inches	75-100
1 inch	50-80
½ inch	30-60
No. 4	15-40
No. 200	0-6.0

At least 50 percent by weight of the material coarser than the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

c. Aggregate for subbase shall be sand or gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type D	Type E
½ in	35-80	
¼ inch	25-65	25-100
No. 40	0-30	0-50
No. 200	0-7.0	0-7.0

Type D aggregate for subbase gravel may contain up to 50 percent by weight Recycled Concrete Aggregate (RCA). When RCA is used, the portion of the resulting blend of gravel and RCA retained on a ½" square mesh sieve shall contain a total of no more than 5 percent by weight of other recycled materials such as brick, concrete masonry block, or asphalt pavement as determined by visual inspection.

RCA shall be substantially free of wood, metal, plaster, and gypsum board as defined in Note 9 in Section 7.4 of AASHTO M 319. RCA shall also be free of all substances that fall under the category of solid waste or hazardous materials.

Aggregate for subbase shall not contain particles of rock which will not pass the 6 inch square mesh sieve.

703.08 Recycled Asphalt Pavement Recycled asphalt pavement shall consist of salvaged asphalt materials from milled pavements or production waste that has been processed before use to meet the requirements of the job mix formula. It shall be free of winter sand, granular fill, construction debris, or other materials not generally considered asphalt pavement.

703.081 RAP for Asphalt Pavement Recycled Asphalt Pavement (RAP) may be introduced into hot-mix asphalt pavement at percentages approved by the Department according to the MaineDOT Policies and Procedures for HMA Sampling and Testing.

If approved by the Department, the Contractor shall provide documentation stating the source, test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Department will obtain samples for verification and approval prior to its use.

The maximum allowable percent of RAP shall be determined by the asphalt content, the percent passing the 0.075 mm sieve, the ratio between the percent passing the 0.075 mm sieve and the asphalt content, and Coarse Micro-Deval loss values as tested by the Department.

The maximum percentage of RAP allowable shall be the lowest percentage as determined according to Table 4 below:

Classification	Maximum RAP Percentage Allowed	Asphalt content standard deviation	Percent passing 0.075 mm sieve standard deviation	Percent passing 0.075 mm sieve / asphalt content ratio	Residual aggregate M-D loss value
Class III	**10%**	**≤ 1.0**	**N/A**	**≤ 4.0**	**≤ 18**
Class II	**20%**	**≤ 0.5**	**≤ 1.0**	**≤ 2.8**	
Class I	**30%**	**≤ 0.3**	**≤ 0.5**	**≤ 1.8**	

Table 4: Maximum Percent RAP According to Test Results

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage and are shown below in Table 5.

Table 5: RAP Verification Limits

Classification	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)
Class III	± 1.5	± 2.0
Class II	± 1.0	± 1.5
Class I	± 0.5	± 0.7

For specification purposes, RAP will be categorized as follows:

Class III – A maximum of 10.0 percent of Class III RAP may be used in any base, intermediate base, surface, or shim mixture. A maximum of 20.0 percent of Class III RAP may be used in hand-placed mixes for item 403.209.

Class II – A maximum of 20.0 percent Class II RAP in any base, binder, surface, or shim course.

Class I – A maximum of 20.0 percent Class I RAP may be used in any base, intermediate base, surface, or shim mixture without requiring a change to the specified asphalt binder. A maximum of 30.0 percent Class I RAP may be used in in any base or intermediate base mixture provided that a PG 58-28 or PG 58-34 asphalt binder is used. A maximum of 30.0 percent Class I RAP may be used in any surface or shim mixture provided that PG 58-34 asphalt binder is used. Mixtures exceeding 20.0 percent Class I RAP must be evaluated and approved by the Department.

The Contractor may use up to two different RAP sources in any one mix design. The total RAP percentage of the mix shall not exceed the maximum allowed for the highest classification RAP source used (i.e. if a Class I & Class III used, total RAP must not exceed 30.0%). The blended RAP material must meet all the requirements of the classification for which the RAP is entered (i.e. 10% Class III with 20% Class I, blend must meet Class I criteria). The Department may take belt cuts of the blended RAP to verify the material meets these requirements. If the Contractor elects to use more than one RAP source in a design, the Contractor shall provide an acceptable point of sampling blended RAP material from the feed belt.

In the event that RAP source or properties change, the Contractor shall notify the Department of the change and submit new documentation stating the new source or properties a minimum of 72 hours prior to the change to allow for obtaining new samples and approval.

Revise this Section by removing 703.7 and 703.9 in its entirety and replace with the following:

703.07 Aggregates for HMA Pavements **Coarse and fine aggregate for hot mix asphalt pavements shall be of such gradation that when combined in the proper proportions, including filler, if required, the resultant blend will meet the composition of mixture for the type of pavement specified.**

Coarse aggregate, that material retained on the No. 4 sieve, shall be crushed stone or crushed gravel and, unless otherwise stipulated, shall consist of clean, tough, durable fragments free from an excess of soft or disintegrated pieces and free from stone coated with dirt or other objectionable matter. Coarse aggregate shall not exceed an absorption of 2.0 percent by weight as determined by AASHTO T 85.

Fine aggregate, material that passes the No. 4 sieve, shall consist of natural sand, manufactured sand, or a combination of these. It shall consist of hard, tough grains, free from injurious amounts of clay, loam, or other deleterious substances. Fine aggregate shall not exceed an absorption of 2.3 percent by weight as determined by AASHTO T 84.

All individual aggregates for hot mix asphalt pavements shall meet Table 3 requirements (excluding LCP) unless otherwise noted. The Department reserves the right to sample and test the aggregate for any of the following properties at any time:

TABLE 3: Aggregate Consensus Properties Criteria

Estimated Traffic, Million 18 kip ESALs	AASHTO T 335 (minimum %)	AASHTO T 304 Method A **	ASTM D 4791 Method B	AASHTO T 176	Aggregate shall meet at least one of these:		
					AASHTO T 327	AASHTO T 96	WSDOT T 113*
< 3.0	75/60	≥ 40%	≤ 10%	≥ 45	≤ 18.0%	≤ 40%	≥ 30
3.0 to < 10	90/80	≥ 45%		≥ 50		≤ 35%	
≥ 10	95/90					≤ 30%	N/A

* As determined by Washington State DOT Test Method T 113, Method of Test for Determination of Degradation Value except that the reported degradation value will be the result of testing a single composite specimen from that portion of the sample that passes the ½ inch sieve and is retained on the No. 10 sieve.

** Property will be evaluated on a mix design basis by calculating a weighted average based upon individual aggregate values (weighted average by the percentage proportion of the aggregate within the design).

AASHTO T 335 - "90/80" denotes that 90 percent of the coarse aggregate has one fractured face and 80 percent has two fractured faces.

AASHTO T 304 - Criteria are presented as percent air voids in loosely compacted fine aggregate, (U).

ASTM D4791 - Criteria are presented as maximum percent by weight of flat and elongated particles (5:1 ratio).

The entire HMA wearing course shall come from the same source of material and the same job mix formula, except when permission is obtained from the Department to change sources.

703.09 HMA Mixture Composition **The coarse and fine aggregate shall meet the requirements of Section 703.07. The several aggregate fractions for mixtures shall be sized, graded, and combined in such proportions that the resulting composite blends, including RAP aggregate will meet the grading requirements of the following table:**

Aggregate Gradation Control Points

Nominal Maximum Aggregate Size---Control Points (Percent Passing)						
Sieve Designation	**Type 25 mm**	**Type 19 mm**	**Type 12.5 mm**	**Type 9.5 mm**	**Type 9.5 mm Thin Lift Mixture (TLM)**	**Type 4.75 mm**
	Percent By Weight Passing - Combined Aggregate					
37.5 mm	**100**					
25 mm	**90-100**	**100**				
19 mm	**-90**	**90-100**	**100**			
12.5 mm	**-**	**-90**	**90-100**	**100**	**100**	**100**
9.5 mm	**-**	**-**	**-90**	**90-100**	**95-100**	**95-100**
4.75 mm	**-**	**-**	**-**	**-90**	**60-95**	**80-100**
2.36 mm	**19-45**	**23-49**	**28-58**	**32-67**	**47-65**	**40 - 80**
1.18 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.60 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.30 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.075 mm	**2.0-6.0**	**2.0-6.0**	**2.0-6.0**	**2.0-7.0***	**2.0-7.0***	**2.0-7.0**

*** For 9.5 mm nominal maximum aggregate size mixtures, the maximum design aim for the percent passing the 75 µm sieve is 6.5%.**

SECTION 709
REINFORCING STEEL AND WELDED STEEL WIRE FABRIC

709.01 Reinforcing Steel Remove the second paragraph of Section 709.01 of the standard specification beginning with "Low-Carbon, Chromium,…" and replace with the following:

" Low-carbon, chromium, reinforcing steel shall be deformed bars conforming to the requirements of ASTM A1035. Bars shall be Grade 100 and alloy Type CS unless otherwise specified on the Plans. "

SECTION 710
FENCE AND GUARDRAIL

710.06 Fence Posts and Braces Revise the first Paragraph so that it reads:

"Wood posts shall be of cedar, white oak, or tamarack or other AWPA approved species, of the diameter or section and length shown on the plans."

Remove the fourth paragraph which starts " That portion of wood posts…".

Revise the paragraph beginning with "Braces shall be of spruce, eastern hemlock … so that it now reads:

"Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPA approved species, or spruce, cedar, tamarack or other AWPA approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces shall be pressure-treated in accordance with AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts. "

710.07 Guardrail Posts Revise this section so that the first sentence of section a. reads:

"a. Wood posts shall be of Norway pine, southern yellow pine, pitch pine, Douglas fir, red pine, white pine, or eastern hemlock or other AWPA approved species."

Revise the next paragraph so that it reads:

Wood posts and offset brackets shall be preservative treated in accordance with the requirements of AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts.

710.08 Guardrail Hardware Revise this subsection by replacing "**AASHTO M 298**" with "**ASTM B695**"

SECTION 711
MISCELLANEOUS BRIDGE MATERIAL

711.06 Stud Shear Connector Anchors and Fasteners Amend this section by deleting it in its entirety and replacing it with:
"Shear connectors shall meet the dimensional tolerances of Figure 9.1 of the ANSI/AASHTO/AWS D1.5 Bridge Welding Code (D1.5 Code). Shear connectors, anchors and fasteners shall meet the material requirements of Section 9 of the D1.5 Code. Shear connectors shall meet the mechanical property requirements of Table 9.1, Type B of the D1.5 Code. Anchors and fasteners shall meet the mechanical property requirements of Table 9.1 of the D1.5 Code, Type A."

SECTION 712
MISCELLANEOUS HIGHWAY MATERIAL

712.061 Structural Precast Units Amend this section by adding the following sentence to the end of the first paragraph of the Construction subsection:

"Facilities certified by NPCA or PCI shall provide to the Fabrication Engineer a copy of their annual audit to include deficiency reports and corrective actions."

Revise this section by changing the letter "b" of ASTM C1611 of the Concrete Testing subsection so that it reads:

"**b. Air content shall be 5.0% to 8.0%**."

SECTION 713
STRUCTURAL STEEL AND RELATED MATERIAL

Section 713.01 Structural Steel Replace paragraph two in its entirety with the following:
"**Main load-carrying components subject to tensile stresses or stress reversal shall meet the notch toughness requirements in AASHTO M 270M, Table 11, Zone 2, for non-fracture critical steel or Table 12, Zone 2 for fracture critical steel. Frequency of tension tests shall comply with the requirements of S1.**"

Section 713.02 High Strength Bolts **R**evise this subsection by removing the portion from the beginning up to and including TABLE 1 – Test Schedule*, and replace it with:

"**Bolts shall conform to the requirements of ASTM F3125, Grade A325, Type 1 or Type 3. Type 3 bolts shall be supplied for all structures utilizing unpainted AASHTO M 270M weathering steel. Type 1 galvanized bolts shall be used for all structures utilizing metallized or galvanized steel.**

Nuts shall meet the requirements of ASTM A563.

Circular and beveled washers shall conform to the requirements of ASTM F436.

Direct Tension Indicators (DTI'S) shall conform to the requirements of ASTM F959. DTI's for use with painted steel shall have a plain "as fabricated" finish. DTI's for use with unpainted steel shall be galvanized to the requirements of ASTM B695 Class 50, Type I and have a fusion-bonded epoxy coating. DTI's used with galvanized steel, metalized steel and steel coated with a zinc-rich primer shall be galvanized to the requirements of ASTM B695 Class 50, Type I.

"Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies shall meet the requirements of ASTM F3125, Grade F1852.

Bolts, nuts and washers specified to be galvanized, shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695 Class 50, Type I.

All fastener (bolts and nuts), whether black or galvanized, shall be coated with a suitable lubricant. Galvanized nuts shall be lubricated with a lubricant containing a visible dye.

Each lot of bolts, nuts, washers and DTI's shall be tested by the manufacturer in accordance with the tests tabulated in Table 1 - Test Schedule. The testing frequency for bolts, nuts and washers from each shipping lot of fasteners shall be as specified in the applicable AASHTO/ASTM Standard Specifications. The testing frequency for each production lot of DTI's shall be as specified in ASTM F959.

TABLE 1 - Test Schedule*

Bolts	Tensile Strength (Wedge Test) Proof Load Hardness Coating Thickness	ASTM F606 ASTM F606 ASTM F606 ASTM B695
Nuts	Proof Load Hardness Coating Thickness	ASTM F606 ASTM F606 ASTM B695
Washers	Hardness Coating Thickness	ASTM F606 ASTM B695
DTI's	Coating Thickness Compression Load	ASTM B695 ASTM F959

Section 716
STRUCTURAL ALUMINUM AND RELATED MATERIAL

716.01 Aluminum Railings: Revise this subsection by removing section d. and replacing with:

d. Steel Anchor Assembly Steel spacers for post anchors shall conform to the requirements of ASTM A36. Nuts embedded in concrete shall conform to the requirements of ASTM A307.

Anchor bolts, exposed nuts and washers shall conform to the requirements of ASTM A449 or ASTM F1554, Grade 55 and shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I.

SECTION 718
TRAFFIC SIGNALS MATERIAL

718.03 Signal Mounting Amend the paragraph beginning with "All trunions, brackets and…" by adding "**For polycarbonate signal heads with more than 3 sections or requiring mounting extensions greater than 12 inches in length, reinforcing plates shall be used to reinforce the housings at the point of attachment.**" to the end of the paragraph.

718.08 Controller Cabinet Revise this subsection by replacing the paragraph beginning with "The cabinet shall be supplied with LED light panels…" on or about page 7-66 with "**The cabinet shall be supplied with white LED light panels which shall automatically illuminate via a door open switch whenever one of the four main cabinet doors are opened for the ground mount cabinet or two main doors for the side of pole cabinet. The ground mounted cabinet shall contain four LED light panels per side totaling eight panels for the cabinet; one panel each at the top and bottom portion of the front side and back side on the Control side and Power/Auxiliary side of the cabinet. Each light panel shall produce a minimum of 250 lumens for a total minimum lumen output of 2000 lumens with all eight panels illuminated. The minimum output per side would be 1000 lumens. The LED panels shall be protected by a clear shatterproof shield. The side of pole mounted cabinet shall contain four light panels; one at the top of the rack assembly and one at the bottom rack assembly on each side of the cabinet.**

A second door open status switch per door shall activate a controller input to log a report event that one of the doors was opened. All door open status switches shall be connected to the same controller input. For the ground mount cabinet, there shall be two switches on each of the four main doors. For the side-of-pole mount cabinet, there shall be two switches on each of the two main doors."

Revise this subsection by replacing the paragraph beginning with "The cabinet shall be supplied with a generator panel …" on or about page 7-68 with:

"The cabinet shall be supplied with a generator panel. The generator panel shall consist of a manual transfer switch and a twist-lock connector for generator hookup. The transfer switch knob and twist-lock connector shall be located inside a stainless steel enclosure with a separate lockable door accessed with a Corbin #2 key. The unit shall be mounted on the left, exterior of the control side wall of the ground mount cabinet a minimum of 36" above the surrounding grade and on the lower left side of the pole mounted cabinet. The generator transfer switch shall be a Reliance C30A1N Signa Series or approved equal. "

Revise this subsection by removing the following from the paragraph beginning with "The ground mounted cabinet shall be supplied and installed with an electric service meter socket trim and electrical service disconnect switch …" on or about page 7-69: **"(removed: thus preventing that space from being used either by equipment supplied as part of the project, or future equipment that would be installed in the rack system. Joe indicated that he would add this language to the detail so it is covered.)".**

Revise this subsection by replacing the following in the paragraph beginning with "The Contractor shall reconfigure the default user name…" on or around page 7-70; "MaineDOT IT" with "**MaineDOT Traffic Division**".

In the paragraph beginning with "Tests shall be conducted by the contractor…" on or around page 7-73, amend this subsection by removing **"in the state of Maine and"** after "The facility shall be".

Amend this Section by adding the following subsection:

718.13 Field Monitoring Unit (FMU) This item of work shall conform to this specification. This item shall consist of furnishing and installing a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

Where applicable, communications from MaineDOT's cloud-based Central Management System (CMS) to the on-street traffic signal controllers shall be made through fiber optic interconnect cable connected back to existing internet connections and/or the Field Monitoring Unit (FMU). The Contractor shall furnish and install all materials necessary for a complete and operational fiber optic interconnection to all project intersections as shown on the plans. All connections to the CMS cloud-based system shall be via a secure VPN network.

The FMU shall be the only remote connection device used by isolated intersections to connect to the cloud-based system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT IT and the Engineer.

The FMU central web based interface shall be a separate element from the CMS.

MATERIALS: The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the ATC traffic cabinet.

2. The FMU shall conform to the following requirements:
   - 2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
   - 2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
   - 2.3 The FMU shall monitor and log all ATC Controller and ATC cabinet faults and or alarms.
   - 2.4 The FMU shall be wired directly to the ATC cabinet.
   - 2.5 The FMU shall have an internal cellular modem running at 4G LTE.
     - 2.5.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.
   - 2.6 The FMU shall incorporate an integrated GPS and cell modem.
   - 2.7 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.
   - 2.8 The FMU shall be powered via a standard 120V input power.

2.9 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.

2.10 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.

2.11 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.

2.12 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.

2.13 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.

2.14 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.

2.15 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.

2.16 The FMU shall include weather proof antennas.

3. **Map Display FMU Management Software**

3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.

3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.

3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top

of the list, followed by medium priority, low priority and then finally by intersections not in alarm.

3.4 The icons shall change to be able to clearly indicate if an intersection is offline.

3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.

3.6 The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.

3.7 The map view shall have the ability to show Google traffic overlays on the map.

4. **Intersection Detail Display FMU Management Software**

4.1 It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:

4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).

4.1.2 The time since the last communication with the device

4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)

4.1.3.1 The AC mains voltage (value)

4.1.3.2 The battery back-up voltage (value)

4.1.3.3 The cabinet temperature (value)

4.1.3.4 The cabinet humidity (value)

4.1.3.5 The presence of AC power (OK or Fail)

4.1.3.6 The flashing status of the intersection (OK or Flashing)

4.1.3.7 Stop Time status (OK or Stop Time Active)

4.1.3.8 The cabinet door status (Open or Closed)

4.1.3.9 The intersection fan status (Fan On or Fan off)

4.1.4 It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two-week period. This includes real time graphs of:

4.1.4.1 The AC mains voltage

4.1.4.2 The battery back-up voltage

4.1.4.3 The cabinet temperature

4.1.4.4 The cabinet humidity

5. **Diagnostics and Log Display FMU Management Software**

5.1 From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.

5.2 It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.

5.3 It shall be possible to print these selected logs to a local printer or a PDF file.

5.4 It shall be possible to export these logs to Excel on the local computer for further analysis.

6. **Alarms FMU Management Software**

6.1 The FMU management software shall have a comprehensive alarm generation capability

6.2 It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.

6.3 Alarms shall be configurable to be of Low, High or Critical Priority.

6.4 The alarm priority shall be displayed throughout the FMU management software, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.

6.5 The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

7. **Alerts FMU Management Software**

7.1 The FMU management software shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.

7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.

7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.

7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

8. **Hosting and Connectivity and Service FMU / FMU Management Software**

8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:

8.1.1 Cellular Connectivity

8.1.2 No cellular overage charges

8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement

8.1.4 Over-the-air software updates

8.1.5 Over-the-air security updates

8.1.6 Future Connected Vehicles Service

Section 719
SIGNING MATERIAL

719.072 Overhead Signing: Revise this subsection by replacing it in entirety with:

"**Sign panels mounted to independent sign support structures and support structure components mounted to bridges passing over the highway are considered to be overhead signing. Overhead signing shall be mounted on W6 by 9 steel beams conforming to the requirements of ASTM A992/A992M, galvanized in accordance with AASHTO M 111 (ASTM A123), or the same size aluminum beams conforming to ASTM B221M, alloys and tempers of 6061-T6, 6063-T6 or 6005-T5. These components shall be horizontally spaced a maximum of 5¼ feet on center, extending from the bottom of sign panel to the top. If supplemental signs are included in the contract, these beams will extend from the bottom of the main sign panel to the top of the supplemental sign panel. The maximum distance from the edge of the sign to the center of the W6 by 9 shall not exceed approximately 3¼ feet.**

On independent sign support structures, these W6 by 9 beam components shall be fastened to chords with a pair of appropriately sized U-bolts on each side of the web at each fastening

location. A similar pair of U-bolt assemblies shall be used in attaching each chord of an overhead component to upright supports. U-bolts for steel support structures shall conform to ASTM A449, Type 1. U-bolt hardware, which includes nuts, flat washers, and helical lock washers, shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Washers shall conform to the requirements of ASTM F436. The U-bolt material for aluminum support structures, or a combination of steel and aluminum structural components, shall be stainless steel conforming to the requirements of ASTM F593, alloy group 1, with a minimum yield strength of 45 ksi. Steel support structures may also utilize stainless steel hardware assemblies as an alternative to galvanized steel. Nuts shall be of the locking type with nylon inserts. Washers shall conform to the requirements of ASTM A276, Type 302. Flat washers, without helical lock washers, will be acceptable in this stainless steel assembly.

On bridge mounted structures, the fastener configurations shall be depicted in the contract documents. "

SECTION 720
STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

720.03 Steel Supports: Revise this subsection by removing the paragraph beginning with "Chord flange splice fastener" and replacing with:

"**Chord flange splice fastener assemblies shall conform to ASTM A325, Type 1, and galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Other fastener assemblies shall be as specified in Section 719.07, or as approved by the Fabrication Engineer."**

720.06 Steel H-beam: Revise this subsection by replacing it in its entirety with:

"**Steel H-beam Post shall conform to the requirements of ASTM A992. All work shall conform to the applicable provisions of Section 504 – Structural Steel. Steel shall be hot-dip galvanized in accordance with AASHTO M 111 (ASTM A123). All steel hardware for use with H-beam poles shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."**

720.07 Anchor Bolts: Revise this subsection by replacing it in its entirety with:

"**Anchor bolts and nuts supplied for aluminum and/or steel supports shall conform to ASTM A449, Type 1, or ASTM F1554, Grade 55, both with a minimum yield strength of 55 ksi. Anchor bolts shall be supplied with 2 heavy hex nuts and 2 hardened washers and unless otherwise specified the anchor bolts shall have a 90° bend with a 6 inch minimum leg length at the lower end. The anchor bolts, nuts and hardened washers shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. The bolt**

shall be zinc-coated 12 inches from the exposed end, unless otherwise specified. If the anchor bolts are to be used with breakaway devices incorporating the function of a nut, for example, longitudinally grooved breakaway couplings, nuts or washers will not be required.

Alternate materials, grades, and designs may be used for anchor bolts subject to approval of the Fabrication Engineer."

720.09 Wood Ornamental Light Standard: Revise this subsection by removing the paragraph beginning with "All bolts shall be" and replacing it with:

"**All bolts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."**

720.12 Wood Sign Posts Revise the first sentence so that it reads:

"Wood sign posts shall be rectangular, straight and sound timber, cut from live growing native spruce, red pine, hemlock, cedar trees or other AWPA approved species, free from loose knots or other structurally weakening defects of importance, such as shake or holes or heart rot."

Revise the third paragraph that starts with "When pressure treated…" so that it reads:

"All sign posts shall be pressure-treated in accordance with AASHTO M 133 and AWPA Standard U1, UC4A, Commodity Specification A: Sawn Products."

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

> "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to *DBAconformance@dol.gov*. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

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3. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)
This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

The United States Department of Transportation (USDOT)

Standard Title VI/Non-Discrimination Assurances

DOT Order No. 1050.2A

The **Maine Department of Transportation** (herein referred to as the "Recipient"), **HEREBY AGREES THAT,** as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation (DOT), through **Federal Highway Administration** (herein referred to as "**FHWA**" is subject to and will comply with the following:

Statutory/Regulatory Authorities

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.,* 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 C.F.R. Part 21 (entitled *Non-discrimination In Federally-Assisted Programs Of The Department Of Transportation-Effectuation Of Title VI Of The Civil Rights Act Of 1964);*
- 28 C.F.R. section 50.3 (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964);

The preceding statutory and regulatory cites hereinafter are referred to as the "Acts" and "Regulations," respectively.

General Assurances

In accordance with the Acts, the Regulations, and other pertinent directives, circulars, policy, memoranda, and/or guidance, the Recipient hereby gives assurance that it will promptly take any measures necessary to ensure that:

> *"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity, "for which the Recipient receives Federal financial assistance from DOT, including the* **FHWA.**

The Civil Rights Restoration Act of 1987 clarified the original intent of Congress, with respect to Title VI and other Non-discrimination requirements (The Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973), by restoring the broad, institutional-wide scope and coverage of these non-discrimination statutes and requirements to include all programs and activities of the Recipient, so long as any portion of the program is Federally assisted.

Specific Assurances

More specifically, and without limiting the above general Assurance, the Recipient agrees with and gives the following Assurances with respect to its Federally assisted **FHWA Program.**

1. The Recipient agrees that each "activity," "facility," or "program," as defined in§§ 21.23(b) and 21.2(e) of 49 C.F.R. § 21 will be (with regard to an "activity") facilitated, or will be (with regard to a "facility") operated, or will be (with regard to a "program") conducted in compliance with all requirements imposed by, or pursuant to the Acts and the Regulations.

2. The Recipient will insert the following notification in all solicitations for bids, Requests For Proposals for work, or material subject to the Acts and the Regulations made in connection with all **FHWA Programs** and, in adapted form, in all proposals for negotiated agreements regardless of funding source:

   *"The **Maine Department of Transportation,** in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."*

3. The Recipient will insert the clauses of Appendix A and E of this Assurance in every contract or agreement subject to the Acts and the Regulations.

4. The Recipient will insert the clauses of Appendix B of this Assurance, as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Recipient.

5. That where the Recipient receives Federal financial assistance to construct a facility, or part of a facility, the Assurance will extend to the entire facility and facilities operated in connection therewith.

6. That where the Recipient receives Federal financial assistance in the form, or for the acquisition of real property or an interest in real property, the Assurance will extend to rights to space on, over, or under such property.

7. That the Recipient will include the clauses set forth in Appendix C and Appendix D of this Assurance, as a covenant running with the land, in any future deeds,

leases, licenses, permits, or similar instruments entered into by the Recipient with other parties:

a. for the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
b. for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

8. That this Assurance obligates the Recipient for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the Assurance obligates the Recipient, or any transferee for the longer of the following periods:

    A. the period during which the property is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or
    b. the period during which the Recipient retains ownership or possession of the property.

9. The Recipient will provide for such methods of administration for the program as are found by the Secretary of Transportation or the official to whom he/she delegates specific authority to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the Acts, the Regulations, and this Assurance.

10. The Recipient agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the Acts, the Regulations, and this Assurance.

By signing this ASSURANCE, **Maine Department of Transportation** also agrees to comply (and require any sub-recipients, sub-grantees, contractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing the **FHWA's** access to records, accounts, documents, information, facilities, and staff. You also recognize that you must comply with any program or compliance reviews, and/or complaint investigations conducted by the **FHWA.** You must keep records, reports, and submit the material for review upon request to **FHWA** or its designee in a timely, complete, and accurate way. Additionally, you must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

Maine Department of Transportation gives this ASSURANCE in consideration of and for obtaining any Federal grants, loans, contracts, agreements, property, and/or discounts, or other Federal-aid and Federal financial assistance extended after the date hereof to the recipients by the U.S. Department of Transportation under the **FHWA Programs**. This ASSURANCE is binding on the State of Maine, other recipients, sub-recipients, sub-grantees, contractors, subcontractors and their subcontractors, transferees, successors in interest, and any other participants in the **FHWA Programs**. The person(s) signing below is authorized to sign this ASSURANCE on behalf of the Recipient.

Maine Department of Transportation
Dale F. Doughty, Commissioner
(Name of Recipient)

By: _____
(Signature of Authorized Official)

Dated: 2-13-26

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Aviation Administration (FHWA)**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **FHWA** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **FHWA** as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non- discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **FHWA** may determine to be appropriate, including, but not limited to:

a. withholding payments to the contractor under the contract until the contractor complies; and/or
b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the **Maine Department of Transportation** will accept title to the lands and maintain the project constructed thereon in accordance with all requirements imposed by Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, part 21, Non-discrimination in Federally-assisted Programs of the Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), the Regulations for the Administration of **Federal Aviation Administration (FHWA) Program,** and the policies and procedures prescribed by the **FHWA** of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the **Maine Department of Transportation** all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto **Maine Department of Transportation** and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the **Maine Department of Transportation**, its successors and assigns.

The **Maine Department of Transportation**, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the **Maine Department of Transportation** will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non- discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation

and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the **Maine Department of Transportation** pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

   1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the **Maine Department of Transportation** will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by **Maine Department of Transportation** pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non- discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*

C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will there upon revert to and vest in and become the absolute property of **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.),* (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.),* as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.),* (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure

compliance with Title VI, you must take reasonable steps to
-ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

NORTHEASTERN UNIVERSITY	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) COASTAL WETLAND ALTERATION
ROUX INSTITUTE CAMPUS	) ADJACENT TO COASTAL WETLAND
L-30881-4D-A-N (approval)	) SIGNIFICANT WILDLIFE HABITAT
L-30881-4P-B-N (approval)	)
L-30881-2F-C-N (approval)	) WATER QUALITY CERTIFICATION
L-30881-TW-D-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. §§ 480-A–480-JJ, Section 401 of the Clean Water Act (33 U.S.C. § 1341), and Chapters 310, 315, and 335 of Department rules, the Department of Environmental Protection (Department) has considered the application of NORTHEASTERN UNIVERSITY (applicant) with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: Historically, the project parcel was occupied by residences and a lobster cannery. In 1913, Burnham & Morrill (B&M) acquired the site and relocated its food manufacturing operations to the site. The site was developed with the cannery building and the codfish building on the pier prior to the enactment of the Natural Resources Protection Act (NRPA). A NRPA Permit by Rule Notification Form (PBR #65659) pursuant to Chapter 305 Permit by Rule Standards Section 2 (06-096 Ch. 305, § 2, last amended June 8, 2012) for an activity adjacent to a protected natural resource which was accepted by the Department on April 20, 2018.

B. Summary: The applicant proposes to redevelop the former B&M manufacturing site to construct a university campus referred to as Roux Institute. The applicant is proposing to reconstruct the pier, construct a new ramp and floating docks, stabilize the shoreline, install three stormwater outfalls, and develop a coastal path and other adjacent site improvements.

The applicant proposes to demolish the existing concrete pier and existing two-story codfish building located on the pier and construct a private pier system accessible to the public. The applicant proposes to alter coastal wetland to construct a 64-foot wide by 174-foot long pile-supported concrete pier with a six-foot wide by 80-foot long ramp and a timber float system consisting of one, 16-foot wide by 32-foot long float; one, 10-foot wide by 24-foot long float; two, 12-foot wide by 32-foot long floats; three, six-foot wide by 24-foot long floats; two, eight-foot wide by 32-foot long floats; and one, 12-foot wide by 40-foot long float. The proposed pile-supported pier will be located approximately within the same footprint as the existing pile supported pier. The pier will be supported

by 88, 14-inch diameter steel pipe pilings, rock socketed to bedrock. The timber float system will have six, 16-inch diameter steel pipe guide pilings. The pier system will result in approximately 395 square feet of direct impact to the coastal wetland due to the piles, approximately 13,785 square feet of indirect impact to the coastal wetland due to shading from the pier, ramp, and floats, and approximately 50 square feet of impact in the upland area adjacent to the resource due to piles.

The applicant proposes to repair, maintain, or construct shoreline stabilization along 1,198 linear feet of shoreline at the project site. Specifically, along 770 linear feet of shoreline the applicant proposes to remove unwanted bricks and concrete debris and refurbish the existing riprap with natural stone within the existing footprint of riprap. Along approximately 151 linear feet of eroded shoreline, the applicant proposes to construct riprap that will extend approximately one foot below the highest annual tide (HAT) line, which is the defined limit of the coastal wetland, with a maximum height of six feet and a 3H:1V slope to meet with the existing riprap that is located below the HAT. Along approximately 75 linear feet of eroded shoreline, the applicant proposes to construct riprap that will extend approximately eight feet below the HAT line with a maximum height of 10 feet and a 3H:1V slope within the footprint of existing riprap. Additionally, the applicant proposes to remove two deteriorated concrete seawalls along 202 linear feet of shoreline and construct riprap, landward and within the footprint of the seawall, with a maximum height of eight feet and a 2H:1V slope. The new riprap will result in approximately 1,830 square feet of direct impact to the coastal wetland and approximately 8,075 square feet of impact in the upland area adjacent to the resource. The applicant also proposes to remove concrete and asphalt as well as fill and grade 36,220 square feet within 25 feet of the coastal wetland to construct a multimodal coastal path, an access drive, retaining walls, and landscaping.

The project is shown on a set of plans, the first of which is titled “The Roux Institute at Northeastern University, Portland, Maine,” prepared by Woodward & Curran, dated February 2024, with a latest revision date on any of the sheets of June 13, 2024. The project will result in 2,225 square feet of direct impact to the coastal wetland and 13,785 square feet of indirect impacts due to shading. The project site is located at 1 Bean Pot Circle in the City of Portland.

The applicant submitted a Natural Resources Protection Act (NRPA) Permit by Rule Notification Form (PBR #78769) pursuant to Chapter 305 Permit by Rule Standards Sections 2 and 7 (06-096 Ch. 305, § 2 and 7, last amended June 8, 2012) for activities adjacent to a protected natural resource and intake pipes which was accepted by the Department on February 28, 2024.

The development of the site is being reviewed pursuant to the Site Location of Development Act, 38 M.R.S. § 489-A, under the City of Portland’s delegated review authority. Stormwater management is being reviewed pursuant to the Stormwater Management Law, 38 M.R.S. § 420-D, under the City of Portland’s capacity to review such developments.

C. Current Use of the Site: The project parcel is approximately 23.5 acres in size and is developed with buildings, a pier, paved parking, lawn, various pavements adjacent to the coastal wetland, riprap, and a seawall section. The parcel is identified as Lots A001 and A002 on Map 447 of the City of Portland's tax maps.

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

The Natural Resources Protection Act (NRPA), in 38 M.R.S. § 480-D(1), requires the applicant to demonstrate that the proposed project will not unreasonably interfere with existing scenic, aesthetic, recreational and navigational uses.

In accordance with Chapter 315, *Assessing and Mitigating Impacts to Scenic and Aesthetic Uses* (06-096 C.M.R. ch. 315, effective June 29, 2003), 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 and surroundings, including an aerial photograph of the project site. Department staff visited the project site on January 18, 2024 and June 6, 2024.

The proposed project is located in Back Cove, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. This area is heavily developed for commercial and industrial purposes. The proposed pier system is similar in design and scale to the existing pier and other nearby pier systems. The applicant has proposed the shortest length and lowest height required to stabilize the embankment, limiting new riprap to only the areas necessary, and proposing to use stone that is visually similar to existing riprap along the applicant's shoreline. The applicant also proposes to plant vegetation on the parcel, including 28,025 square feet of new landscaping within 25 feet of the coastal wetland.

The Department staff utilized the Department's Visual Impact Assessment Matrix in its evaluation of the proposed project and the Matrix showed an acceptable potential visual impact rating for the proposed project. Based on the information submitted in the application, the visual impact rating, and the site visits, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department of Marine Resources (DMR) reviewed the project and stated that the proposed project should not cause any significant adverse impact to navigation or recreation based on the nature of the project and its location.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the coastal wetland provided.

3. SOIL EROSION:

The NRPA, in 38 M.R.S. § 480-D(2), requires the applicant to demonstrate that the proposed project 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.

Construction will primarily take place from the upland and with a demolition excavator or pile driver from the pier. A barge will be utilized to deploy turbidity curtains, install piles at the seaward end of the pier, and to install floats. Removal of the existing pier and associated structures will involve selective demolition and controlled removal of debris. The pier will be surrounded by a double barrier of turbidity curtains. Equipment will operate from existing structures and not from the intertidal area. Shoreline stabilization work will occur in the dry and at low tides. The applicant proposes to follow erosion and sediment control best management practices (BMPs) found in the latest edition of the Department's Maine Erosion and Sediment Control BMPs Manual. A variety of erosion and sediment control measures will be utilized during construction including stabilized construction entrances, up-gradient runoff diversion barriers, downgradient sediment barriers, catch basin inlet protection devices, preservation and maintenance of vegetated areas to the maximum extent possible, temporary stabilization of disturbed areas to be exposed for more than seven days, permanent stabilization of final graded areas, controls for fugitive dust, and inspection of the project site until it is permanently stabilized.

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:

The NRPA, in 38 M.R.S. § 480-D(3), requires the applicant to demonstrate that the proposed project will not unreasonably harm 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.

The proposed project area is developed and consists primarily of manmade structures on the shoreline and pavement adjacent to the coastal wetland. The upper-intertidal area consists of gravel and cobble, with mixed coarse and fine sediments in the mid-intertidal area grading to mudflat in the low intertidal area. The area is semi-protected and drains completely at low tide. Mussels have been mapped in the area; however, shellfish harvesting is not allowed. Additionally, there are no eelgrass beds in the area.

According to the Department's Geographic Information System (GIS) database is mapped Tidal Wading Bird and Waterfowl Habitat (TWWH), a designated Significant Wildlife Habitat, located at the site.

In its review, the Department of Marine Resources (DMR) recommended that piles are installed between November 8 and April 8 of any year or during low tide time periods and that all removed material should be stored above the HAT (in the upland). Furthermore, DMR stated that if best management practices to contain debris and other materials are followed during construction, the project as proposed would not cause any significant adverse long-term impact to marine resources or habitat.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and recommended that the amount of plantings be maximized to the greatest extent practicable. The applicant has provided a landscaping and planting plan that illustrates that a reduction of impervious area within 75 feet of the coastal wetland from 58 percent to 36 percent.

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 that all removed material is stored above the HAT and piles are installed between November 8 and April 8 or any year or during low tide time periods, as described above.

5. WATER QUALITY CONSIDERATIONS:

As discussed in Finding 3, the applicant proposes to use erosion and sediment control measures during construction to minimize impacts to water quality from siltation.

Furthermore, the applicant proposes to use lumber treated with chromated copper arsenate (CCA) to construct the pier. To protect water quality, all CCA-treated lumber must be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

Provided that CCA-treated lumber is cured as described above, the Department finds that the proposed project will not 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 directly alter 395 square feet of coastal wetland for the construction of the pier system and 1,830 square feet for the installation of the riprap that will result in 2,225 square feet of direct impact to the coastal wetland. The applicant proposes to indirectly alter 13,785 square feet of coastal wetland due to shading from the pier, ramp, and float. There will be an additional 44,295 square feet of impact to the upland area within 25 feet of the coastal wetland. Coastal wetlands are wetlands of special significance.

The *Wetlands and Waterbodies Protection Rules*, 06-096 C.M.R. ch. 310 (last amended November 11, 2018), interpret and elaborate on the Natural Resources Protection Act

(NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a coastal wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. An applicant must submit an analysis of whether there is a practicable alternative to the project that would be less damaging to the environment and this analysis is considered by the Department in its assessment of the reasonableness of any impacts. Additionally, for activities proposed in, on, or over wetlands of special significance the activity must be among the types listed in Chapter 310, § 5(A) or a practicable alternative less damaging to the environment is considered to exist and the impact is unreasonable. A pier is a water dependent use and its proposed construction is among the activities specifically provided for in Chapter 310, § 5(A)(1)(c). Additionally, stabilizing eroding shoreline is also specifically allowed as provided for in Chapter 310, § 5(A)(1)(h).

The applicant submitted an alternatives analysis for the proposed project completed by Woodard & Curran, dated February 2024, with a revision date of June 18, 2024. The purpose of the project is to create a resilient and sustainable campus for continued growth of the education, research, entrepreneurial, and collaborative programs of the Roux Institute. The project aims to provide safe and accessible public waterfront access for recreational activities and multi-modal transportations services as well as provide for marine-related education and research. The applicant considered ten potential locations to site and construct the Roux Institute Campus. Of the ten sites, only three of the parcels were waterfront locations. The former B&M site was chosen because it was the only site with an existing pier, the possibility of waterborne transportation, and the potential for marine related research, education, partnerships, and entrepreneurial opportunities.

The applicant considered several alternatives to constructing the proposed pier system including the alternative of not building the pier system; but not having the pier would not provide safe access to marine-related education and research which is foundational to the project purpose. The applicant considered further minimizing the footprint of the pier; however, this alternative was rejected because a minimum pier size is required to safely accommodate marine-related program activities, water transportation services, and emergency vehicle access.

Additionally, the applicant considered several alternatives for the shoreline stabilization taking into consideration shoreline characteristics, vegetation, and access to the site. The applicant considered taking no action but determined erosion would continue if left untouched which would jeopardize the integrity of the infrastructure and public safety from the existing debris, so this alternative was rejected. The applicant considered stabilizing the entire shoreline with larger riprap; however, the applicant conducted an evaluation of the existing riprap

provided adequate protection from erosion. The applicant selected the proposed method because it will ensure stability of the shoreline, while limiting disturbance of the coastal wetland.

B. Minimal Alteration. In support of an application and to address the analysis of the reasonableness of any impacts of a proposed project, an applicant must demonstrate that the amount of coastal wetland to be altered will be kept to the minimum amount necessary for meeting the overall purpose of the project. The applicant minimized coastal wetland impacts from the shoreline stabilization projects by limiting the project to only the areas that are actively eroding. The applicant minimized coastal wetland impacts for the proposed pier system by proposing a replacement pier two feet narrower and within the same footprint, while reducing the permanent impact to the intertidal area by utilizing fewer piles.

C. Compensation. In accordance with Chapter 310, § 5(C)(6)(b), compensation may be required to achieve the goal of no net loss of coastal wetland functions and values. This project will result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. The applicant provided a Functional Assessment prepared by FB Environmental Associates and dated June 2023, which describes the wetland functions and values within the project area of the site. The assessment indicates that the coastal wetland has been altered by the existing development present on and adjacent to the site. Areas of the coastal wetland are strewn with old, weathered bricks and other historic construction debris. The upland is primarily developed with impervious area adjacent to the shoreline. The proposed project will improve the condition of the coastal wetland from the removal of historic debris along the shoreline and under the pier structure as well as improve the condition of the area adjacent to the coastal wetland from the reduction of impervious area and the increase of vegetation with buffer plantings and landscaping. Further, the proposed project will not have an adverse impact on marine resources or wildlife habitat as determined by DMR and MDIFW. For these reasons, the Department waives the compensation requirement in accordance with Chapter 310, § 5(C)(7).

The Department finds that the applicant has avoided and minimized coastal 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.

7. OTHER CONSIDERATIONS:

The Department finds, based on the design, proposed construction methods, and location, the proposed project will not inhibit the natural transfer of soil from the terrestrial to the marine environment, will not interfere with the natural flow of any surface or subsurface waters, and will not cause or increase flooding. The proposed project is not located in a coastal sand dune system, is not a crossing of an outstanding river segment, and does not involve dredge spoils disposal or the transport of dredge spoils by water.

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. §§ 480-A–480-JJ and Section 401 of the Clean Water Act (33 U.S.C. § 1341):

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 all removed material is stored above the HAT and piles are installed between November 8 and April 8 or any year or during low tide time periods, as described in Finding 4.

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 provided that CCA-treated lumber is cured as described in Finding 5.

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 38 M.R.S. § 480-P.

THEREFORE, the Department APPROVES the above noted application of NORTHEASTERN UNIVERSITY to construct a pier system, stabilize the shoreline and fill and grade within 25 feet of the coastal wetland as described in Finding 1, 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.

4. Piles shall be installed between November 8 and April 8 of any year or during low tide time periods.

5. All removed material shall be stored above the HAT.

6. All CCA-treated lumber shall be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

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 6th DAY OF SEPTEMBER, 2024.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
For: Melanie Loyzim, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

AAS/L30881ANBNCNDN/ATS#92060,92214,92216,92217

FILED
September 6th, 2024
State of Maine
Board of Environmental Protection

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S. §§ 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 September 2016

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: August 2021 **Contact: (207) 314-1458**

SUMMARY

This document provides information regarding a person's rights and obligations in filing an administrative or judicial appeal of a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner.

Except as provided below, there are two methods available to an aggrieved person seeking to appeal a licensing decision made by the DEP Commissioner: (1) an administrative process before the Board of Environmental Protection (Board); or (2) 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. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

A person filing an appeal with the Board should review Organization and Powers, 38 M.R.S. §§ 341-D(4) and 346; the Maine Administrative Procedure Act, 5 M.R.S. § 11001; and the DEP's *Rule Concerning the Processing of Applications and Other Administrative Matters* (Chapter 2), 06-096 C.M.R. ch. 2.

DEADLINE TO SUBMIT AN APPEAL TO THE BOARD

Not more than 30 days following the filing of a license decision by the Commissioner with the Board, an aggrieved person may appeal to the Board for review of the Commissioner's decision. The filing of an appeal with the Board, in care of the Board Clerk, is complete when the Board receives the submission by the close of business on the due date (5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board, as determined by the received time stamp on the document or electronic mail). Appeals filed after 5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board will be dismissed as untimely, absent a showing of good cause.

HOW TO SUBMIT AN APPEAL TO THE BOARD

An appeal to the Board may be submitted via postal mail or electronic mail and must contain all signatures and required appeal contents. An electronic filing must contain the scanned original signature of the appellant(s). The appeal documents must be sent to the following address.

Chair, Board of Environmental Protection
c/o Board Clerk
17 State House Station
Augusta, ME 04333-0017
ruth.a.burke@maine.gov

The DEP may also request the submittal of the original signed paper appeal documents when the appeal is filed electronically. The risk of material not being received in a timely manner is on the sender, regardless of the method used.

At the time an appeal is filed with the Board, the appellant must send a copy of the appeal to: (1) the Commissioner of the DEP (Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine 04333-0017); (2) the licensee; and if a hearing was held on the application, (3) any intervenors in that hearing proceeding. **Please contact the DEP at 207-287-7688 with questions or for contact information regarding a specific licensing decision.**

REQUIRED APPEAL CONTENTS

A complete appeal must contain the following information at the time the appeal is submitted.

1. *Aggrieved status*. The appeal must explain how the appellant has standing to bring the appeal. This requires an explanation of how the appellant 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.* The appeal must identify the specific findings of fact, conclusions of law, license conditions, or other aspects of the written license decision or of the license review process that the appellant objects to or believes to be in error.
3. *The basis of the objections or challenge.* For the objections identified in Item #2, the appeal must state why the appellant believes that the license decision is incorrect and should be modified or reversed. If possible, the appeal should cite specific evidence in the record or specific licensing criteria that the appellant believes were not properly considered or fully addressed.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license to changes in specific license conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those matters specifically raised in the written notice of appeal.
6. *Request for hearing.* If the appellant wishes the Board to hold a public hearing on the appeal, a request for hearing must be filed as part of the notice of appeal, and it must include an offer of proof regarding the testimony and other evidence that would be presented at the hearing. The offer of proof must consist of a statement of the substance of the evidence, its relevance to the issues on appeal, and whether any witnesses would testify. The Board will hear the arguments in favor of and in opposition to a hearing on the appeal and the presentations on the merits of an appeal at a regularly scheduled meeting. If the Board decides to hold a public hearing on an appeal, that hearing will then be scheduled for a later date.
7. *New or additional evidence to be offered.* If an appellant wants to provide evidence not previously provided to DEP staff during the DEP's review of the application, the request and the proposed supplemental evidence must be submitted with the appeal. The Board may allow new or additional evidence to be considered in an appeal only under limited circumstances. The proposed supplemental evidence must be relevant and material, and (a) the person seeking to add information to the record must show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process; or (b) the evidence itself must be newly discovered and therefore unable to have been presented earlier in the process. Requirements for supplemental evidence are set forth in Chapter 2 § 24.

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, and is made accessible by the DEP. Upon request, the DEP will make application materials available to review and photocopy during normal working hours. There may be 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 the appeal.* DEP staff will provide this information upon request and answer general questions regarding the appeal process.

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. Unless a stay of the decision is requested and granted, a licensee may proceed with a project pending the outcome of an appeal, but the licensee 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 acknowledge receipt of an appeal, and it will provide the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials admitted by the Board as supplementary evidence, any materials admitted in response to the appeal, relevant excerpts from the DEP's administrative record for the application, and the DEP staff's recommendation, in the form of a proposed Board Order, will be provided to Board members. The appellant, the licensee, and parties of record are notified in advance of the date set for the Board's consideration of an appeal or request for a hearing. The appellant and the licensee will have an opportunity to address the Board at the Board meeting. The Board will decide whether to hold a hearing on appeal when one is requested before deciding the merits of the appeal. The Board's decision on appeal may be to affirm all or part, affirm with conditions, order a hearing to be held as expeditiously as possible, reverse all or part of the decision of the Commissioner, or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, the licensee, and parties of record of its decision on appeal.

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. § 346(1); 06-096 C.M.R. ch. 2; 5 M.R.S. § 11001; and 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. 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. § 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 Clerk at 207-287-2811 or the Board Executive Analyst at 207-314-1458 bill.hinkel@maine.gov, or for judicial appeals contact the court clerk's office in which the appeal will be filed.

Note: This information sheet, in conjunction with a review of the statutory and regulatory provisions referred to herein, is provided to help a person to understand their rights and obligations in filing an administrative or judicial appeal. 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.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT
MAINE PROJECT OFFICE
442 CIVIC CENTER DRIVE SUITE 350
AUGUSTA MAINE 04330

September 17, 2024

Regulatory Division
Maine Section

Carrie Walsh
Northeastern University
360 Huntington Ave
Boston, MA 02115
Via Email: c.walsh@northeastern.edu

Dear Ms. Walsh:

The U.S. Army Corps of Engineers (USACE) has reviewed your application to repair and replace existing rip rap within 20,870 square feet (SF) of intertidal area below the High Tide Line of Casco Bay. The work will also include the discharge fill material into 400 SF of intertidal area to facilitate the installation of new shoreline stabilization (rip rap). The existing pier will be removed and replaced with a new 68' x 174' pile supported pier below the mean high water line of Casco Bay. A new a 6' x 80' gangway ramp and a series of ten variously sized mooring floats (totaling 2,944 SF) will be installed be attached to the new pier. The project is located at 1 Beanpot Circle (at Latitude 43.677270º and Longitude -70.254670º) Portland, ME and is depicted on the enclosed plans titled "The Roux Institute at Northeastern University" on 12 sheets dated February 2024 and an additional single amended sheet dated 6/20/2024.

Based on the information you have provided, we verify that the activity is authorized under General Permit 01- Maintenance of Authorized Fills; 03- Structures, Floats, and Lifts; and 07- Shoreline stabilization of the October 14, 2020, Federal Permit known as the Maine General Permits (GPs). If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. A copy of these permits can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/

Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to the enforcement provisions of our regulations. Therefore, in the event changes to this project are contemplated, it is recommended you coordinate with this office prior to proceeding with the work. This office must approve any changes before you undertake them. You must perform this work in compliance with the terms and conditions of the GPs listed above, and also in compliance with the following special conditions:

Project Specific Special Conditions:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.

2. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.

3. You must maintain the activity herein in good condition and in conformance with the terms and conditions of this authorization. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with a General Condition of this GPs. Should you wish to cease to maintain the authorized activities, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this authorization from this office, which may require restoration of the area.

4. The permittee shall comply with the enclosed Memorandum of Agreement titled "MEMORANDUM OF AGREEMENT BETWEEN U.S. ARMY CORPS OF ENGINEERS, THE MAINE HISTORIC PRESERVATION OFFICER, AND NORTHEASTERN UNIVERSITY REGARDING THE NORTHEASTERN UNIVERSITY ROUX INSTITUTE PROJECT." This is to avoid, minimize and/or mitigate for the adverse effect that the authorized work will cause at this historic property.

5. The permittee shall record the Codfish Building using the "Outline Format" narrative and according to *Maine Historic Building Recordation* (MHBR) standards and the *Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation*. The SHPO has prescribed these standards for the undertaking in the enclosed Schedule of Documentation (Attachment B). Photographs must be sent to the SHPO in hard copy form for approval prior to the commencement of demolition, with a digital copy to the USACE. The SHPO and USACE will have thirty (30) days to review the written and photographic requirements and provide comments. The USACE shall be copied on all correspondence.

6. During the demolition and removal of the Codfish building and pier, the permittee shall retain a licensed archaeologist onsite should previously unidentified historic properties or artifacts discovered during project construction that may be affected by the undertaking, the permittee shall notify the signatories of any discovery and cease all work at that location until the requirements of 36 CFR 800.13 and 33 CFR 325, Appendix C have been satisfied.

7. Within one (1) year, following completion of the pier and coastal path as proposed, the permittee shall have in place or be in the final processes of placing interpretive historic elements, as proposed, within the vicinity of the undertaking.

8. If the permittee shall install, remove, or conduct major reconfigurations or maintenance of the float system between April 30 and September 1 in any given year, work must be conducted in the presence of a qualified bird monitor. At least two weeks prior to the start of work, the permittee must notify the USACE of the proposed work and the permitee's selection of a monitor must be approved by the USACE in writing. If the monitor observes a federally threatened or endangered bird species, such as Roseate Tern within 1,000' of the work area during construction, the work must pause until all listed birds have left the 1,000' buffer of the work area. Additionally, work shall stop if any nesting has occurred within the project area and work will not restart until October 11th and not go past April 1st of any year.

9. Floats shall be installed with float stops on all steel pipe guides to minimize adverse effects to mudflats during MLLW.

10. The permittee shall not own and operate a commercial vessel (e.g. water taxi) from the proposed facility to ensure compliance with ESA Section 7. Should the permittee seek to add a commercial vessel, the permittee shall consult with the USACE to reinitiate Section 7 consultations.

11. The permitee shall ensure that minimal lighting (e.g., minimum lighting required to be consistent with coast guard requirements, down-lighting, lighting that avoids disorienting birds) will be used at the site and gear will have no opportunity for bird entanglement (e.g., netting, lines, potential for marine debris produced by the project).

12. The permitee shall store all gear when not in use in an upland location above the high tide line or properly secure all gear on the float system. No gear may be stored on marsh vegetation or any other special aquatic site.

13. The permittee shall mark all floats and all gear stored on the float system with up-to-date identification and contact information. The permittee shall conduct checks on a regulate basis to ensure identification remains intact and legible throughout the year.

14. The permittee shall ensure that all floats or associated gear will not be allowed to drift into intertidal habitats, or stored, maintained, or otherwise accessed from salt marshes, seabird nesting islands, and other sensitive habitats. Within 48 hours of discovery of lost gear or floats, the permittee shall notify the U. S. Fish and Wildlife Service (mainefieldoffice@fws.gov) and the local harbor master of the lost gear and provide a description including any identifiable information such as gear type and identification tag number. The permittee will practice due diligence in locating and retrieving the missing equipment.

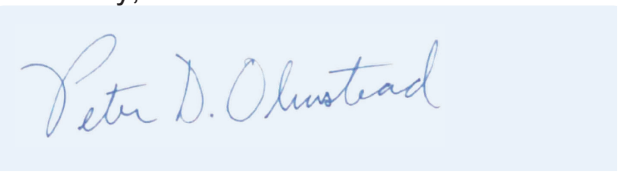
15. The permittee is required to report the entanglement or death of any bird associated with the float system within 24 hours of discovery/observation of such an event to the U. S. Fish and Wildlife Service (Amanda Cross at 20-385-5679 or Amanda_Cross@fws.gov; or Brian Englehard at 207-479-9707 or Brian_Englehard@fws.gov). Reports shall include the USACE Permit No., reporter name and contact information, date, time, photos, what type of gear the bird was entangled in, and descriptions of any visible injuries if released alive.

This verification is valid until October 14, 2025. You must commence or be under contract to commence the work authorized herein by October 14, 2025 and complete the work by October 14, 2026. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. It is recommended that you contact this office before this authorization expires to discuss if permit reissuance is a possibility.

This general permit verification and any associated authorizations does not preclude the necessity to obtain any other Federal, State, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Jeremy Lessard, PWS., Project Manager at 978-318-8789, or by email at Jeremy.s.lessard@usace.army.mil. This agency continually strives to improve our customer service. In order to better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,



Peter Olmstead
Chief, Maine Section

Enclosures
Project Plans
MOA

Cc (w/enclosures):
Denise Cameron, Woodard & Curran (via dcameron@woodardcurran.com)

Work-Start Notification Form

File Number: NAE-2024-00111 State: Maine County: Cumberland

Permittee: Northeastern University, Carrie Walsh
Date Verification Issued: 9/17/2024
Project Manager: Jeremy Lessard, PWS.

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District District
Attn: Jeremy Lessard, PWS.
442 Civic Center Drive Suite 350
Augusta , Maine 04330
or
Jeremy.s.lessard@usace.army.mil
978-318-8789

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.

Contractor Name/Contractor Firm: _____
Business Address: _____
_____
Contractor Phone and Email: _____

Proposed Construction Dates: Start: _____ Finish: _____

_____ _____
Signature of Permittee Date

Compliance Certification Form

File Number: NAE-2024-00111 State: Maine County: Cumberland

Permittee: Northeastern University, Carrie Walsh
Date Verification Issued: 9/17/2024
Project Manager: Jeremy Lessard, PWS.

Within one month of completion of the activity authorized by this permit and any mitigation required by the permit (you must submit this form after mitigation is complete, but not the mitigation monitoring, which requires separate submittals), sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District District
Attn: Jeremy Lessard, PWS.
442 Civic Center Drive Suite 350
Augusta , Maine 04330
or
Jeremy.s.lessard@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying, or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work, and mitigation (if applicable), authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit including any general or specific conditions.

Date Authorized Work Started: _____ Completed: _____

Describe any deviations from permit (attach drawing(s) depicting the deviations):

_____

_____

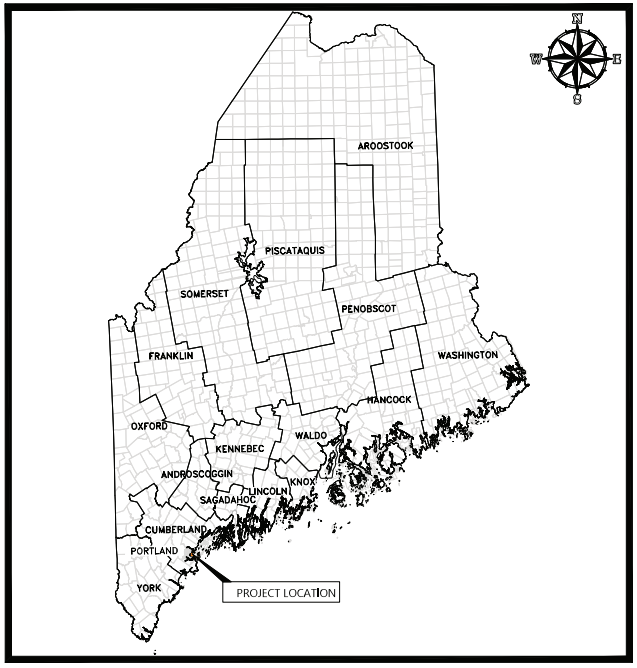
***Note: The description of any deviations on this form does not constitute approval by the USACE.**

_____ _____

Signature of Permittee **Date**

THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY PORTLAND, MAINE

NOT FOR CONSTRUCTION



PROJECT LOCATION MAP

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
CIVIL	
C-0	COVER
C-1	GENERAL NOTES & KEY PLAN
C-2	EXISTING CONDITIONS
C-3	PROPOSED CONDITIONS
C-4	RESOURCE AREA IMPACTS
C-5	EROSION CONTROL DETAILS
C-6	OUTFALL DETAILS
L1	SHORELINE IMPROVEMENTS SECTIONS
MS1.02	EXISTING PIER & SECTION
MS1.03	PROPOSED MARINE PLAN
MS1.04	PROPOSED PIER & FLOAT PLAN
MS3.02	PROPOSED PIER & FLOAT SECTIONS

SITE LOCATION MAP

SOURCE: USGS TOPO QUADRANGLE

Woodard & Curran
12 Mountfort Street
Portland, Maine 04101
800.426.4262 | www.woodardcurran.com

PE SEAL:

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

CLIENT INFO:

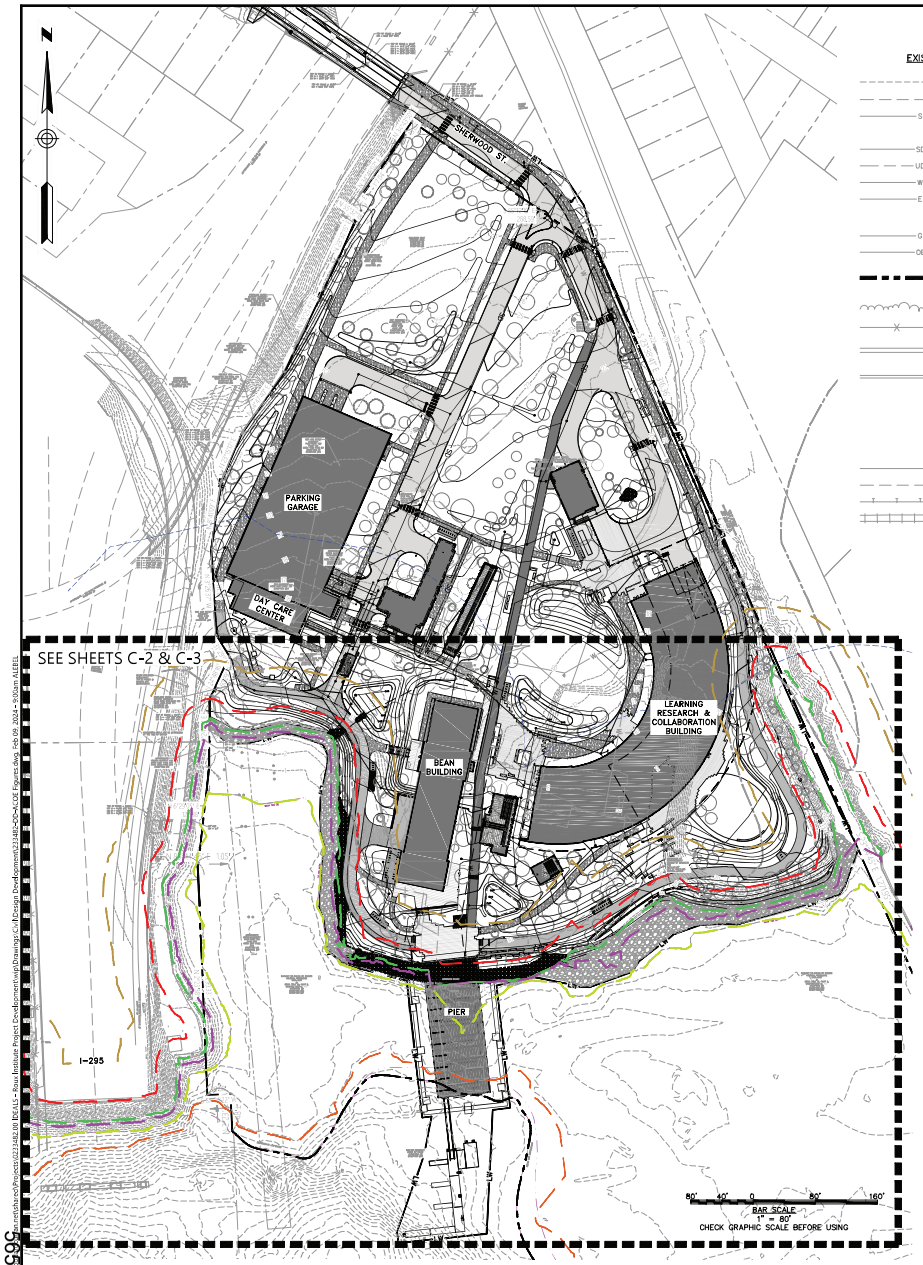
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY PORTLAND, MAINE

REV	MM/DD/YY	DESCRIPTION

JOB NO:	233482
DATE:	FEB. 2024
SCALE:	AS NOTED
DESIGNED BY:	ANL
DRAWN BY:	RCM
CHECKED BY:	LJS
FILENAME:	233482-00-ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS COVER

DRAWING NO:
C-0



CIVIL LEGEND

EXISTING		PROPOSED
	CONTOUR (1' INTERVAL)	
	CONTOUR (INDEX)	
S	SANITARY SEWER	S
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
W	WATER LINE	W
E	UNDERGROUND ELECTRIC	
	UNDERGROUND TELECOMMUNICATIONS	
G	GAS LINE	
OE	OVERHEAD ELECTRIC	OE
	PROPERTY LINE	
	EDGE OF VEGETATION	
	FENCE	
	RETAINING WALL	
	GRANITE CURB	
	FLUSH CURB	
	SLOPE GRANITE CURB	
	TIPDOWN	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
	GUARDRAIL	
	RAILROAD TRACKS	
	ROOF OVERHANG	
	SEDIMENT BARRIER	
	LIMIT OF WORK	LW
	SIDEWALK	
	BITUMINOUS PAVEMENT	
	CONCRETE	
	BUILDING FOOTPRINT	

CIVIL LEGEND

EXISTING		PROPOSED
S	SANITARY SEWER MANHOLE	S
	CLEAN OUT	CO
D	DRAINAGE MANHOLE	D
	CATCH BASIN	
	AREA DRAIN	
	ELECTRICAL MANHOLE	E
T	TELECOMMUNICATIONS MANHOLE	T
TELE BOX	TELEPHONE STAND BOX	
G	GAS METER BOX	
	GAS VENT	
	GAS GATE	
	TRANSFORMER	
	UTILITY POLE	
	UTILITY POLE WITH GUY	
	LIGHTPOST	
	WATER GATE VALVE	
	CURB STOP	
	REDUCER	
	SOLID SLEEVE	
	WATER SHUT OFF VALVE	
	HYDRANT	
W	WATER METER BOX	W
	PROPERTY MONUMENT	
MB	MAIL BOX	
	STREET AND MISCELLANEOUS SIGNS	
FP	FLAGPOLE	
XXX.XX	SPOT ELEVATION	XXX.XX
	TREE/SHRUB	
	BOLLARD	
	SECURITY CAMERA	CAM
	BLUE LIGHT INTERCOM	TEL

CIVIL GENERAL NOTES

1. SITE AND TOPOGRAPHIC DATA ABOVE ELEVATION 0.00 PROVIDED BY ON THE GROUND SURVEY PERFORMED BY VHB, 500 SOUTHBOROUGH DRIVE, SUITE 105B, SOUTH PORTLAND, MAINE 04106 (207).899.3150. PLAN ENTITLED "EXISTING CONDITIONS SURVEY, RECORD OWNER: THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFT SCIENCE, 1 BEAN POT CIRCLE, CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE" DATED: 9/15/2023. SURVEY DATA SHOWN BELOW ELEVATION 0.00 WAS COLLECTED ON APRIL 4, 2023, BY CHILDS ENGINEERING CORPORATION, 34 WILLIAM WAY, BELLINGHAM, MA 02019 (508)966-9092.
2. VERTICAL DATUM IS REFERENCED TO CITY DATUM WITH ONE FOOT CONTOUR INTERVALS. CITY DATUM IS +0.02 FT NGVD 1929. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
3. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATION TO OR DEVIATION FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION: TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION, AND SURFACING OF PARKING AREAS, AND LOCATION AND SIZE OF BUILDINGS.
4. THE CONTRACTOR SHALL CALL "DIG SAFE" AT 811 AT LEAST 72 HOURS PRIOR TO EXCAVATION IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY CODES. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITY WITH UTILITY COMPANIES, EMERGENCY SERVICES AND CITY. NOTIFY UTILITY COMPANIES WITHIN 48 HOURS OF WORK ACTIVITY ADJACENT TO THOSE UTILITIES
5. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT SHALL BE RESET AT THE CONTRACTOR'S EXPENSE BY A LICENSED LAND SURVEYOR ACCEPTABLE TO THE CITY. PROPERTY MONUMENTS SHALL BE RESET IN ACCORDANCE WITH CITY OF PORTLAND STANDARDS.
6. THE UTILITY LOCATIONS SHOWN IN PLAN AND PROFILE ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION BY THE CONTRACTOR. CONTACT THE ENGINEER AND OWNER IMMEDIATELY UPON DISCOVERING ANY CONFLICTS WITH EXISTING AND PROPOSED UTILITY LOCATIONS. NOT ALL EXISTING UTILITIES ARE SHOWN ON PLANS.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE SITE DRAWINGS, INCLUDING BUT NOT LIMITED TO ALL UTILITIES, STORM INFRASTRUCTURE, SIGNS, UTILITY POLES, FENCES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH THE GOVERNING AUTHORITY'S SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COSTS SHALL BE INCURRED BY THE CONTRACTOR.
8. LAND OUTSIDE THE PROPOSED LIMIT OF WORK SHALL NOT BE DISTURBED BY THE CONTRACTOR. ANY LAND OUTSIDE LIMIT OF WORK DISTURBED BY CONTRACTOR SHALL BE RESTORED BY CONTRACTOR AT NO EXPENSE TO OWNER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
10. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY CODES, REGULATIONS, LEGAL REQUIREMENTS, PERMIT CONDITIONS, ETC.
11. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKWAYS, STREETS, PAVEMENTS, CURBING, TREES, PLANTINGS, LAWN, FENCING TO REMAIN ON OR OFF THE PREMISES, AND SHALL REPAIR AND REPLACE AT HIS/HER OWN EXPENSE, AS DIRECTED BY THE ENGINEER, ANY ITEMS DAMAGED AS A RESULT OF THE CONTRACTOR'S WORK.
12. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.
13. IF IMPORTED FILL MATERIAL IS REQUIRED, IT SHALL BE CERTIFIED IN WRITING BY CONTRACTOR AS NON-CONTAMINATED, CLEAN FILL SUITABLE FOR THE INTENDED USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING OF ENVIRONMENTAL PARAMETERS AS OUTLINED IN THE PROJECT SPECIFICATIONS.
14. RESTORE ALL AREAS DISTURBED BY CONTRACTOR'S OPERATIONS TO ORIGINAL FINISH (GRAVEL, PAVEMENT, RIPRAP, GRASS, ETC.) UNLESS OTHERWISE NOTED ON PLANS. RESTORATION OF ALL AREAS DAMAGED BY CONTRACTOR SHALL BE INCIDENTAL TO THE PROJECT.
15. ALL MATERIAL SHALL BE FURNISHED BY CONTRACTOR UNLESS OTHERWISE NOTED.
16. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.
17. RESTRICT ACCESS TO SITE THROUGH THE USE OF APPROPRIATE SIGNAGE, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURES IN PLACE DURING NON-WORKING HOURS. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS. SITE SAFETY IS THE RESPONSIBILITY OF CONTRACTOR, DURING BOTH WORKING AND NON-WORKING HOURS.
18. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION.
19. CONTRACTOR SHALL PROVIDE AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THESE PLANS AND THE LATEST EDITION OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S BEST MANAGEMENT PRACTICES MANUAL. KEEP ALL STREETS FREE OF DUST, MUD, AND DEBRIS. STREETS AND WALKWAYS SHALL BE SWEPT REGULARLY, AND TEMPORARY CONSTRUCTION ENTRANCES SHALL BE UTILIZED DURING CONSTRUCTION. CONTRACTOR SHALL MAINTAIN EROSION CONTROL AND STORMWATER POLLUTION PREVENTION SYSTEMS IN COMPLIANCE WITH THE REQUIREMENTS OF THE MAINE CONSTRUCTION GENERAL PERMIT (MCGP). CONTRACTOR SHALL CONDUCT AND MAINTAIN RECORDS OF EROSION CONTROL INSPECTIONS PER THE NOTICE OF INTENT TO COMPLY WITH THE MAINE CONSTRUCTION GENERAL PERMIT. CONTRACTOR SHALL PREPARE AND SUBMIT A NOTICE OF TERMINATION TO THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, UPON COMPLETION OF THE CONSTRUCTION PROJECT. SUBMIT A COPY OF THE INSPECTION RECORDS AND THE NOTICE OF TERMINATION TO THE OWNER AND ARCHITECT. A DRAFT OF THE NOTICE WILL BE PROVIDED TO THE OWNER AND THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO SUBMISSION.
20. CONTRACTOR SHALL CLEAN AND/OR FLUSH ALL MANHOLES, CATCH BASINS, AND ASSOCIATED PIPING AFTER THE WORK HAS BEEN COMPLETED.
21. A COMPLETE SET OF "RECORD" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS TO THE SANITARY SEWER SYSTEM, WATER DISTRIBUTION SYSTEM, STORM SEWER SYSTEM AND ANY OTHER UTILITY INSTALLATIONS OR ALTERATIONS WITHIN THE PROJECT LIMITS SHALL BE SUBMITTED TO THE CITY OF PORTLAND. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL (ACAD) AND HARD COPY FORMAT AS DEFINED IN THE SPECIFICATIONS PRIOR TO PAYMENT OF FINAL RETAINAGE.
22. ALL UTILITY SERVICES AND MAINS ARE APPROXIMATE AS SHOWN. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING SERVICES AND MAINS AND RELOCATE AS REQUIRED TO COMPLETE WORK. CONTRACTOR SHALL COORDINATE WORK WITH THE CITY OF PORTLAND, PORTLAND WATER DISTRICT, UNITIL, CMP, AND ANY OTHER UTILITY OWNERS AND PROPERTY OWNERS.
23. ACTIVITIES THAT HAVE THE POTENTIAL TO DISTURB SOIL SUCH AS UTILITY AND SUBSURFACE STRUCTURE INSTALLATION/RELOCATION WORK, FOUNDATION INSTALLATION, GRADING, PAVING, AND LANDSCAPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROJECT SOIL MANAGEMENT PLAN. APPLICABLE SOIL MANAGEMENT PROCEDURES INCLUDE SITE CONTROLS AND CONSTRUCTION MEASURES TO REDUCE EXPOSURE TO SOIL DURING CONSTRUCTION, AS WELL AS TO FACILITATE THE PROPER HANDLING, STORAGE, CHARACTERIZATION, TRANSPORT, ONSITE REUSE, AND/OR OFFSITE REUSE, OR DISPOSAL, OF EXCESS SOIL THAT MAY BE GENERATED DURING CONSTRUCTION.
24. ALL NEW BURIED WATER PIPE SHALL HAVE A MINIMUM 5 FEET COVER UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER. BURIED PIPE WITH LESS THAN 4 FEET OF COVER SHALL HAVE A MINIMUM OF 4 INCHES OF RIGID INSULATION WITH AN R-VALUE OF R-20 INSTALL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

Woodard & Curran
12 Mountfort Street
Portland, Maine 04101
800.426.4262 | www.woodardcurran.com

PE SEAL:

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER

Amy N. Lebel

NOT FOR CONSTRUCTION

CLIENT INFO:

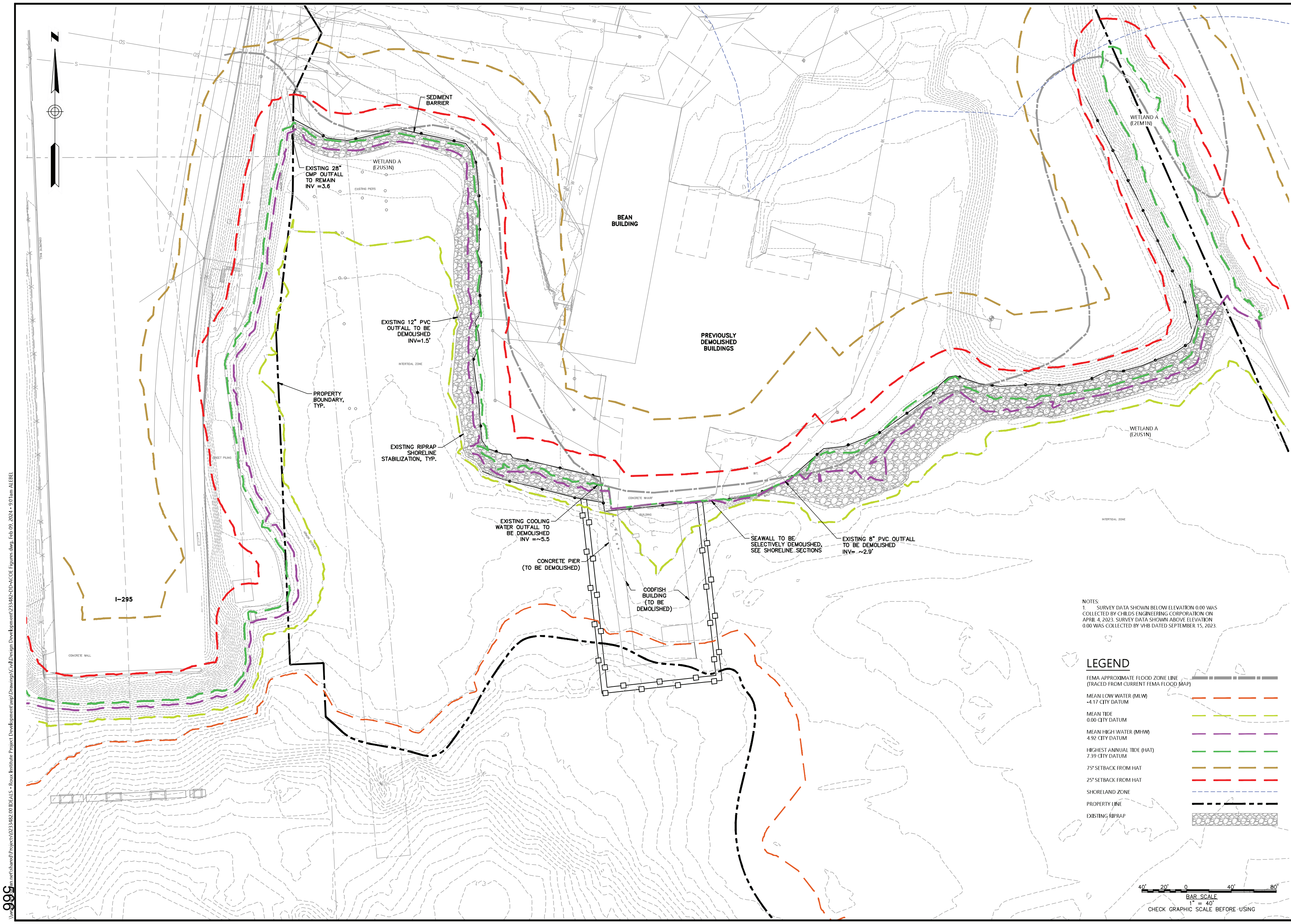
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PORTLAND, MAINE

REV	MM/DD/YY	DESCRIPTION

JOB NO:	023482
DATE:	FEB. 2024
SCALE:	1" = 80'
DESIGNED BY:	ANL
DRAWN BY:	RCM
CHECKED BY:	LJS
FILENAME:	233482-00-ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS
GENERAL NOTES & KEY PLAN

DRAWING NO:
C-1



NOTES:
1. SURVEY DATA SHOWN BELOW ELEVATION 0.00 WAS COLLECTED BY CHILDS ENGINEERING CORPORATION ON APRIL 4, 2023. SURVEY DATA SHOWN ABOVE ELEVATION 0.00 WAS COLLECTED BY VHB DATED SEPTEMBER 15, 2023.

LEGEND

FEMA APPROXIMATE FLOOD ZONE LINE (TRACED FROM CURRENT FEMA FLOOD MAP)
MEAN LOW WATER (MLW) -4.17 CITY DATUM
MEAN TIDE 0.00 CITY DATUM
MEAN HIGH WATER (MHW) 4.92 CITY DATUM
HIGHEST ANNUAL TIDE (HAT) 7.39 CITY DATUM
75' SETBACK FROM HAT
25' SETBACK FROM HAT
SHORELAND ZONE
PROPERTY LINE
EXISTING RIPRAP

40' 20' 0 40' 80'
BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

22x34

Woodard & Curran
12 Mountfort Street
Portland, Maine 04101
800.426.4262 | www.woodardcurran.com

PE SEAL:
STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

CLIENT INFO:
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PORTLAND, MAINE

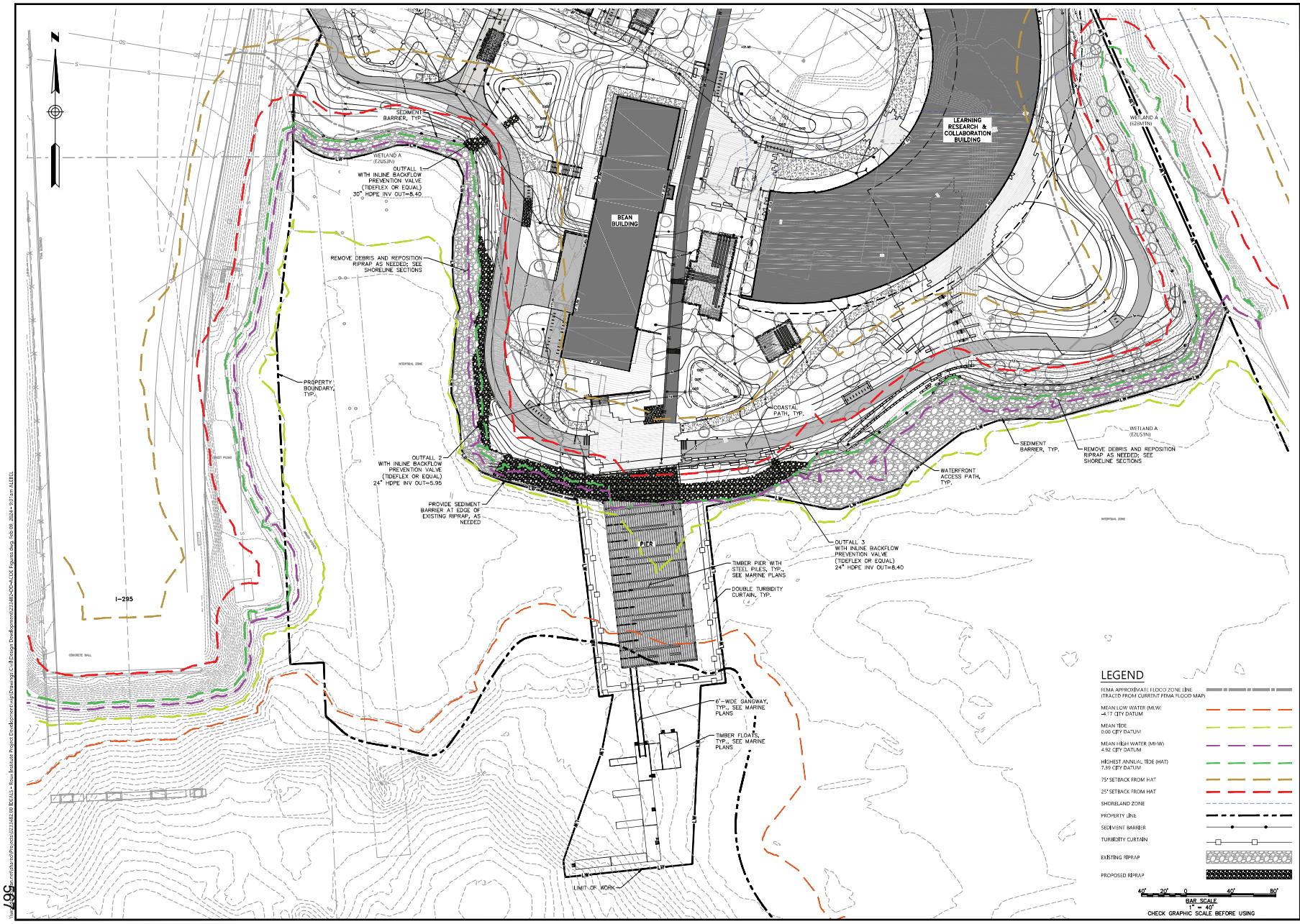
REV	MM/DD/YY	DESCRIPTION

JOB NO:	0233482
DATE:	FEB. 2024
SCALE:	1"=20'
DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	LJS
FILENAME:	233482•DD•ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS
EXISTING CONDITIONS

DRAWING NO:
C-2

\\wc...an.net\shared\Projects\0233482.00 IDEALS - Roux Institute Project Development\wip\Drawings\Civil\Design Development\233482•DD•ACOE Figures.dwg, Feb 09, 2024 - 9:01am ALEBEL



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PE SEAL:

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

CLIENT INFO:

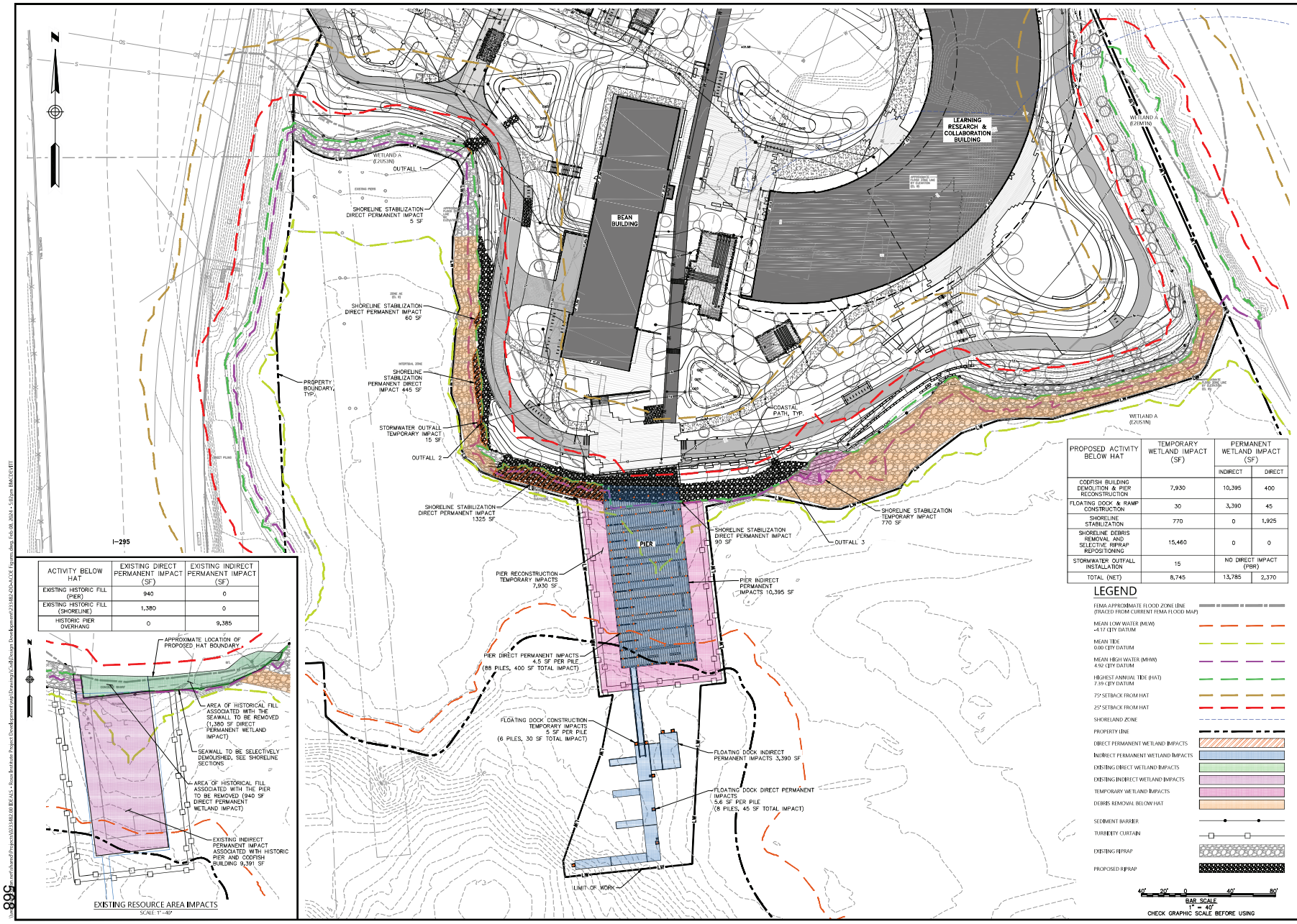
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PORTLAND, MAINE

REV	MM/DD/YY	DESCRIPTION

JOB NO:	023548Z
DATE:	FEB. 2024
SCALE:	1"=20'
DESIGNED BY:	ANL
DRAWN BY:	RCM
CHECKED BY:	LJS
FILENAME:	233482-00-ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS PROPOSED CONDITIONS

DRAWING NO:
C-3



PROPOSED ACTIVITY BELOW HAT	TEMPORARY WETLAND IMPACT (SF)	PERMANENT WETLAND IMPACT (SF)	
		INDIRECT	DIRECT
CODFISH BUILDING DEMOLITION & PIER RECONSTRUCTION	7,930	10,395	400
FLOATING DOCK & RAMP CONSTRUCTION	30	3,390	45
SHORELINE STABILIZATION	770	0	1,925
SHORELINE DEBRIS REMOVAL AND SELECTIVE RIPRAP REPOSITIONING	15,460	0	0
STORMWATER OUTFALL INSTALLATION	15	NO DIRECT IMPACT (PBR)	
TOTAL (NET)	8,745	13,785	2,370

ACTIVITY BELOW HAT	EXISTING DIRECT PERMANENT IMPACT (SF)	EXISTING INDIRECT PERMANENT IMPACT (SF)
EXISTING HISTORIC FILL (PIER)	940	0
EXISTING HISTORIC FILL (SHORELINE)	1,380	0
HISTORIC PIER OVERHANG	0	9,385

EXISTING RESOURCE AREA IMPACTS
SCALE: 1" = 40'

LEGEND

- FEMA APPROXIMATE FLOOD ZONE LINE (TRACED FROM CURRENT FEMA FLOOD MAP)
- MEAN LOW WATER (MLW) -4.17 CITY DATUM
- MEAN TIDE 0.00 CITY DATUM
- MEAN HIGH WATER (MHW) 4.92 CITY DATUM
- HIGHEST ANNUAL TIDE (HAT) 7.39 CITY DATUM
- 75' SETBACK FROM HAT
- 25' SETBACK FROM HAT
- SHORELAND ZONE
- PROPERTY LINE
- DIRECT PERMANENT WETLAND IMPACTS
- INDIRECT PERMANENT WETLAND IMPACTS
- EXISTING DIRECT WETLAND IMPACTS
- EXISTING INDIRECT WETLAND IMPACTS
- TEMPORARY WETLAND IMPACTS
- DEBRIS REMOVAL BELOW HAT
- SEDIMENT BARRIER
- TURBIDITY CURTAIN
- EXISTING RIPRAP
- PROPOSED RIPRAP

40' 20' 0 40' 80'
BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

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LICENSED PROFESSIONAL ENGINEER

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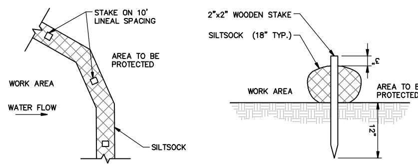
CLIENT INFO:
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PORTLAND, MAINE

REV	MM/DD/YY	DESCRIPTION

JOB NO:	023482
DATE:	FEB. 2024
SCALE:	AS NOTED
DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	LJS
FILENAME	23482-DD-ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS RESOURCE AREA IMPACTS

DRAWING NO:
C-4

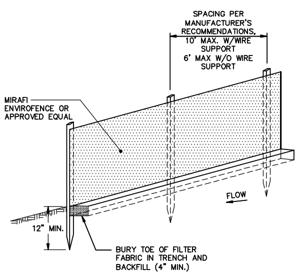


NOTE:

1. WHEN STAKING IS NOT POSSIBLE, HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SEDIMENT BARRIER TO HELP STABILIZE DURING RAINFALL/RUNOFF EVENTS.

SEDIMENT BARRIER – SILT SOCK

N.T.S.



NOTES:

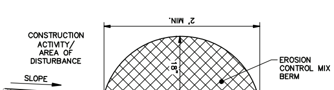
- INSTALL FABRIC ON UPHILL SIDE OF SUPPORT POSTS
- INSTALL SILT FENCE ACROSS SLOPES
- SILT FENCE SHALL NOT BE USED IN DRAINAGE WAYS

MAINTENANCE: INSPECT FOR TEARS IN THE FABRIC OR DAMAGE TO SUPPORTS. REPAIR AS NECESSARY. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES A DEPTH OF SIX-INCHES OR LESS.

REMOVAL: WHEN UPSLOPE AREAS ARE STABILIZED, THE STRUCTURE AND ANY ACCUMULATED SEDIMENT WILL BE REMOVED.

SEDIMENT BARRIER – SILTATION FENCE DETAIL

N.T.S.

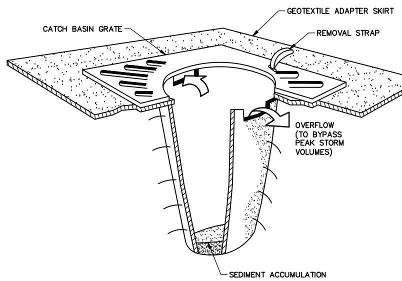


NOTES:

1. EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF THE PROJECT SITE. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.
2. EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS:
   - THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100%, DRY WEIGHT BASIS.
   - PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70%, MAXIMUM OF 85%, PASSING A 0.75" SCREEN.
   - THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
   - LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
   - SOLUBLE SALTS CONTENT SHALL BE < 4.0 MMHOS/CM.
   - THE PH SHOULD FALL BETWEEN 5.0 AND 8.0.

SEDIMENT BARRIER – EROSION CONTROL MIX BERM

N.T.S.



NOTES:

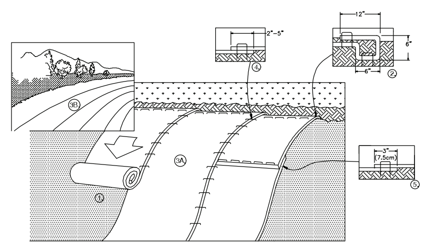
CATCH BASIN PROTECTION TO BE "SILTSACK" (BY ACF ENVIRONMENTAL) OR "STREAM GUARD" (BY FOSS ENVIRONMENTAL SERVICES).

INSERT TO BE EMPTIED IN AN APPROVED MANNER WHEN IT IS 1/2 FULL OF SEDIMENT.

INSPECT INSERT AFTER ALL RAINFALL EVENTS, REPAIR AND MAINTAIN AS REQUIRED.

TEMPORARY INLET PROTECTION

N.T.S.



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED AS WELL AS REMOVING ANY PROTRUDING ROCKS, STUMPS OR ROOTS. DURING THE GROWING SEASON (APRIL 15–SEPTEMBER 15) USE RECP'S ON THE BASE OF GRASSED WATERWAYS, SOIL SLOPES HAVING A GRADE GREATER THAN 15%, OR ANYWHERE WHERE HAY MULCH HAS PROVEN TO BE INEFFECTIVE AT CONTROLLING SHEET EROSION. RECP'S ARE A MANUFACTURED COMBINATION OF MULCH AND NETTING DESIGNED TO PREVENT EROSION AND RETAIN SOIL MOISTURE. FOR OVER WINTER PROTECTION, APPLY RECP'S ON THE BASE AND SIDE SLOPES OF GRASSED WATERWAYS AND ON SLOPES STEEPER THAN AN 8% GRADE.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH. NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.
6. UNTIL GRASS IS ABUNDANT, INSPECT PERIODICALLY AND AFTER EACH RAINSTORM TO CHECK FOR EROSION. IMMEDIATELY REPAIR AND ADD MORE MULCH UNTIL GRASSES ARE FIRMLY ESTABLISHED. DO NOT MOW THE FIRST YEAR.

ROLLED EROSION CONTROL MATTING

N.T.S.

EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION CONTROL

CONTRACTOR SHALL PREPARE AND SUBMIT A SOIL EROSION AND WATER POLLUTION CONTROL PLAN TO ENGINEER.

MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
SEDIMENT BARRIER	ALL	BEFORE SOIL DISTURBANCE, INSTALL DOWNHILL OF AREAS TO BE DISTURBED AND AROUND MATERIAL STOCKPILES.
UP-SLOPE DIVERSION	ALL	BEFORE SOIL DISTURBANCE, INSTALL UPHILL OF AREAS TO BE DISTURBED AND MATERIAL STOCKPILES.
CATCH BASIN PROTECTION	ALL	BEFORE SOIL OR PAVEMENT DISTURBANCE, INSTALL ACF ENVIRONMENTAL, INC. HIGH FLOW SILTSACK, SILTSAVER INLET FILTER. OR EQUAL, INSTALLED PER MANUFACTURER'S REQUIREMENTS.
DUST CONTROL	ALL	DURING DRY WEATHER, APPLY WATER AND CALCIUM CHLORIDE TO CONTROL DUST.
TEMPORARY SEEDING	APRIL 15 TO OCT. 1	SOIL STOCKPILES THAT ARE NOT COVERED AND DISTURBED AREAS THAT WILL NOT BE DISTURBED AGAIN WITHIN 14 DAYS. IF GRASS GROWTH PROVIDES LESS THAN 95% SOIL COVERAGE BY NOV. 1, APPLY MULCH AND ANCHOR WITH EROSION CONTROL BLANKET.
MULCH	APRIL 15 TO SEPT. 15	ON ALL AREAS OF EXPOSED SOIL PRIOR TO RAIN EVENTS OR EVERY 7 DAYS, APPLY 100–150 LBS (2.5 BALES) PER 1,000 SQ FT. BY MECHANICAL BLOWER.
WINTER MULCH	SEPT. 16 TO OCT. 31	ON ALL AREAS OF EXPOSED SOIL PRIOR TO PRECIPITATION OR EVERY 7 DAYS, APPLY 150 TO 170 LBS. MULCH (4 BALES) PER 1,000 SQ. FT. BY MECHANICAL BLOWER. EROSION CONTROL BLANKET MAY BE USED AS A SUBSTITUTE FOR WINTER MULCH.
	NOV. 1 TO APRIL 14	ON ALL AREAS OF EXPOSED SOIL, APPLY 150 TO 170 LBS. MULCH (4 BALES) PER 1,000 SQ. FT. AND ANCHOR WITH NETTING AT THE END OF EACH WORKING DAY. EROSION CONTROL BLANKET MAY BE USED AS A SUBSTITUTE FOR WINTER MULCH.
INSPECTIONS	UNTIL SITE IS PERMANENTLY STABILIZED	INSPECT THE EROSION AND SEDIMENTATION CONTROL MEASURES DAILY, AND MAINTAIN AND REPAIR AS NECESSARY.

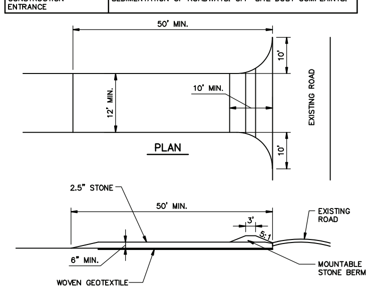
PERMANENT EROSION CONTROL:

MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
PAVEMENT BASE COURSE FINAL COURSE	WHEN NO FROST IS IN GROUND	INSTALL ONLY IN AREAS SHOWN ON THE PLAN, SHORTLY AFTER PAVEMENT BASE IS BROUGHT TO FINAL GRADE. INSTALL NEAR COMPLETION OF PROJECT.
PERMANENT SEEDING	APRIL 15 TO SEPT. 15	ON FINAL GRADE AREAS, WITHIN 7 DAYS OF GRADE PREPARATION, PREPARE TOPSOIL, FOLLOWED BY SEED AND MULCH APPLICATION.
DORMANT SEEDING	SEPT. 16 TO APRIL 15	ON FINAL GRADE AREAS, WITH PREPARED TOPSOIL. APPLY SEED AT DOUBLE THE SPECIFIED RATE ON BARE SOIL, AND FOLLOW WITH AN APPLICATION OF WINTER MULCH.
GROUND COVER, TREES, SHRUBS	APRIL 15 TO NOV. 1	INSTALL WITH FINAL LANDSCAPING.
PERMANENT MULCH	ALL	INSTALL WITH FINAL LANDSCAPING.

INSPECTIONS:

REGULAR INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MADE AT LEAST WEEKLY AND PRIOR TO AND FOLLOWING STORM EVENTS. MINIMUM INSPECTIONS SHALL BE MADE AS LISTED IN THE TABLE BELOW.

INSPECTED ITEM	LOOK FOR
MULCHED SURFACES	THIN MULCH OR INADEQUATE APPLICATION. WIND MOVEMENT.
SEEDED SURFACES	POOR SEED GERMINATION. LOSS OF MULCH. DEVELOPMENT OF RIVULETS.
SEDIMENT BARRIER	SEDIMENT BUILD-UP TO ONE HALF THE HEIGHT OF THE BARRIER. UNDERMINING OF THE BARRIER. SUPPORTING STAKES LOOSE, TOPPLED, OR UNMARKED. BREAKS IN BARRIER.
PERIMETER DIVERSION	DISCHARGE IS TO STABILIZED AREA. EROSION OR BREAKS IN BARRIER. SUPPORTING STAKES LOOSE, TOPPLED OR UNMARKED.
CATCH BASIN PROTECTION	SEDIMENT BUILD-UP AND STRUCTURE BLOCKAGES. SLOW FLOW/PONDING WATER. BREAKS IN FABRIC OR VOIDS IN BARRIER.
DEWATERING FILTER	BREAKS IN FABRIC OR SUPPORTING STRUCTURE. SLOW FLOW, INDICATING HIGH SEDIMENT BUILD-UP.
CONSTRUCTION ENTRANCE	SEDIMENTATION OF ROADWAYS. OFF-SITE DUST COMPLAINTS.



NOTES:

- CONSTRUCTION ENTRANCES MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
- WHEEL WASH PITS MAY ALSO BE USED, IF APPROVED.

MAINTENANCE: INSPECT FOR EFFECTIVE REMOVAL OF SOIL FROM VEHICLES PRIOR TO LEAVING THE SITE. SWEEP ANY SOIL FROM ADJACENT ROADWAYS.

REMOVAL: AT LEAST ONE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL ALL AREAS OF THE SITE ARE STABILIZED.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.

EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE THE USE OF STABILIZED CONSTRUCTION ENTRANCES, HYDRAULIC MULCH, HAY AND STRAW MULCH, EROSION CONTROL BLANKET, TURF REINFORCED MATTING, RIPRAP AND TEMPORARY SEEDING. TEMPORARY SEDIMENT CONTROL MEASURES INCLUDE THE USE OF SEDIMENT BARRIER LIKE SILT SOCK, SILT FENCE, AND EROSION CONTROL MIX BERMS, CATCHBASIN TEMPORARY INLET PROTECT AND GEOTEXTILE FILTER BAGS. PERMANENT MEASURES INCLUDE PERMANENT VEGETATION OR PAVING.

GENERAL

A. THE PROJECT SHALL CONFORM WITH THE STANDARDS OF THE MAINE CONSTRUCTION GENERAL PERMIT.

B. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK PUBLISHED BY THE MAINE DEP UNLESS OTHERWISE NOTED IN THESE PLANS. HTTP://MAINE.GOV/DEP/BLWQ/DOCSTAND/ESCBMPS/

C. ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE, DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND/OR MUNICIPAL OFFICIALS SHALL BE INSTALLED BY THE CONTRACTOR.

D. THE CONTRACTOR IS RESPONSIBLE FOR ALL FINES RESULTING FROM EROSION OR SEDIMENTATION FROM THE SITE TO SURROUNDING PROPERTIES, WATER BODIES, OR WETLANDS AS A RESULT OF THIS PROJECT.

E. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE SITE WHENEVER POSSIBLE WHILE ALLOWING PROPER SITE DEVELOPMENT.

F. CONSTRUCTION STAGING SHALL BE CONDUCTED IN A WAY TO MINIMIZE THE POTENTIAL FOR STORMWATER RUN-ON TO DISTURBED AREAS. SEDIMENT BARRIER AND ANY OTHER RELEVANT EROSION CONTROL MEASURES SHALL BE MOVED AND/OR ADDED TO, TO ACCOUNT FOR CHANGES IN DISTURBED AREA DUE TO CONSTRUCTION STAGING..

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE ABOVE PERSONNEL. DESCRIPTIONS OF PERMANENT STABILIZATION FOR VARIOUS COVER TYPES FOLLOWS:

   i. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS THAT 90% OF THE DISTURBED AREA IS COVERED WITH REASONABLY THICK UNIFORM STAND OF PERMANENT GRASS SPECIES, FREE FROM SIZABLE THIN OR BARE SPOTS.
   ii. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THAT COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE OFF.
   iii. FOR MULCHED AREAS, PERMANENT STABILIZATION MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL.
   iv. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE ASPHALT BINDER COURSE.

H. IF THE AREA WILL REMAIN UNWORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, AND WILL NOT BE BUILT ON, THEN IMMEDIATELY PROVIDE PERMANENT STABILIZATION USING VEGETATION THROUGH PLANTING, SEEDING, SOD OR THROUGH THE USE OF PERMANENT MULCH OR RIPRAP. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS. AMEND AREAS OF DISTURBED, OVERLY-COMPACTED SUBSOIL WITH TOPSOIL OR COMPOST AND LIGHTLY TILL 2–3" OF SOIL AMENDMENTS INTO THE TOP 8" OF SOIL.

I. PERMANENT SEEDING SPECIFICATION: IT IS RECOMMENDED THAT PERMANENT SEEDING BE COMPLETED BETWEEN APRIL 1 AND AUGUST 15 OF EACH YEAR. LATE SEASON SEEDING MAY BE DONE BETWEEN AUGUST 15 AND SEPTEMBER 15. AREAS NOT SEEDED OR WHICH DO NOT OBTAIN A SATISFACTORY GROWTH BY OCTOBER 1 SHALL BE SEEDED WITH AROOSTOCK WINTER RYE OR MULCHED AT SPECIFIED RATES. SEE WINTER SEEDING AND MULCHING SPECIFICATIONS FOR STABILIZATION AFTER NOVEMBER 1.

   i. APPLY TOPSOIL TO A DEPTH OF 6 INCHES. IN COMPACTED AREAS TILL 2–3" OF COMPOST INTO UPPER 8" OF DISTURBED SOIL AND THEN APPLY 6 INCHES OF TOPSOIL.
   ii. APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS. IN LIEU OF SOIL TESTS, APPLY GROUND LIMESTONE AT A RATE OF 33 LBS PER 1000 SQUARE FEET AND GRANULAR, COMMERCIAL-GRADE FERTILIZER 10–10–10 AT A RATE OF 18 LBS PER 1000 SQUARE FEET.
   iii. UNIFORMLY APPLY SEED MIXTURE AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2.5 BALES PER 1000 SQUARE FEET AND ANCHOR AS NECESSARY.

J. PROTECT ALL SEEDED AREAS WITH MULCH OR EROSION CONTROL BLANKET IN AREAS OF SHEET OR CONCENTRATED FLOWS. MULCH ALL AREAS SO THAT SOIL IS NOT VISIBLE THROUGH THE MULCH REGARDLESS OF THE APPLICATION RATE. SCHEDULE SEEDING OR SODDING TO AVOID FAILURE DUE TO SUMMER DROUGHT AND FALL FROST. NEWLY SEEDED AREAS SHOULD BE PROTECTED FROM VEHICLE TRAFFIC, PEDESTRIAN TRAFFIC AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL ESTABLISHED. AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE OR SURFACE EROSION IS EVIDENT.

K. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL PERMANENT SLOPES STEEPER THAN 3:1 OR AS OTHERWISE NOTED, EROSION CONTROL BLANKET SHALL BE NORTH AMERICAN GREEN S150BN OR APPROVED EQUAL. EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

L. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURE UPON STABILIZATION OF PROJECT AREA & COST SHALL BE INCIDENTAL TO CONTRACT.

WINTER CONDITIONS

A. WINTER CONSTRUCTION IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 1. IF AREAS WITHIN THE CONSTRUCTION AREA ARE NOT STABILIZED WITH TEMPORARY OR PERMANENT MEASURES OUTLINED ABOVE BY NOVEMBER 15 THEN THE SITE MUST BE PROTECTED WITH ADDITIONAL STABILIZATION MEASURES THAT ARE SPECIFIC TO WINTER CONDITIONS.

GOOD HOUSEKEEPING AND POLLUTION PREVENTION

A. SPILL PREVENTION CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER RUNOFF AND APPROPRIATE SPILL PREVENTION, CONTAINMENT AND RESPONSE PLANNING AND IMPLEMENTATION.

B. DURING CONSTRUCTION, PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUND OR SURFACE WATERS MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO INFILTRATION AREAS. AN "INFILTRATION AREA" IS ANY ARE OF THE SITE THAT BY DESIGN, OR AS A RESULTS OF SOIL AND TOPOGRAPHY, ACCUMULATES RUNOFF THAT INFILTRATES IN THE SOIL. DIKES, BERMS, SUMPS AND OTHER FORMS OF TEMPORARY SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.

C. LOCATE ALL MATERIAL STOCKPILES WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

D. TAKE ALL REASONABLE MEASURES TO MINIMIZE DUST RESULTING FROM THE PROJECT. OIL MAY NOT BE USED FOR DUST CONTROL.

E. LOCATE ALL LITTER, CONSTRUCTION DEBRIS AND CONSTRUCTION CHEMICALS WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

F. TRENCH OR FOUNDATION DE-WATERING MUST BE SPREAD THROUGH SUFFICIENT NATURAL BUFFERS THAT HAVE CAPACITY TO INFILTRATE THE PUMPED WATER OR SHOULD BE PUMPED TO DESIGNED CONSTRUCTION DEWATERING DEVICES AS DESCRIBED IN THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK.

G. SEDIMENTS AND SOIL MATERIALS SHOULD BE SWEPT FROM PAVED SURFACES AT THE END OF EACH WORKDAY OR PRIOR TO RAIN EVENTS, WHENEVER POSSIBLE.

INSPECTION AND MAINTENANCE

A. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROLS, INCLUDING THE STANDARDS IN THE MAINE CONSTRUCTION GENERAL PERMIT, THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK OR ANY MUNICIPAL REQUIREMENTS MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF ADDITIONAL BMPS OR MODIFICATIONS TO BMPS ARE NECESSARY, THE MODIFICATIONS MUST BE IMPLEMENTED WITH 7 CALENDAR DAYS OR PRIOR TO ANY PRECIPITATION EVENT. ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

B. AN INSPECTION AND MAINTENANCE LOG MUST BE KEPT BY THE CONTRACTOR, SUMMARIZING THE SCOPE OF THE INSPECTION, DATE, AND MAJOR OBSERVATIONS RELATING TO THE OPERATION OF EROSION AND SEDIMENT CONTROL BMPS, MATERIAL STORAGE AREAS, AND VEHICLE ACCESS POINTS TO THE CONSTRUCTION AREA. THE INSPECTION LOG SHOULD BE DELIVERED TO THE PROPERTY OWNER OR RESPONSIBLE CONTRACTING ENTITY UPON COMPLETION OF THE PROJECT.

22x34

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NOT FOR CONSTRUCTION

CLIENT INFO:
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PORTLAND, MAINE

REV	MM/DD/YY	DESCRIPTION

JOB NO:	0233482
DATE:	FEB. 2024
SCALE:	AS NOTED
DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	LJS
FILENAME:	233482-DD-ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS
EROSION CONTROL DETAILS

DRAWING NO:
C-5

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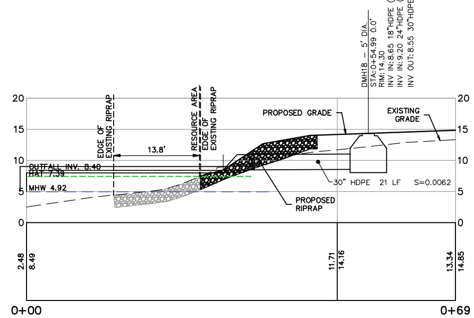
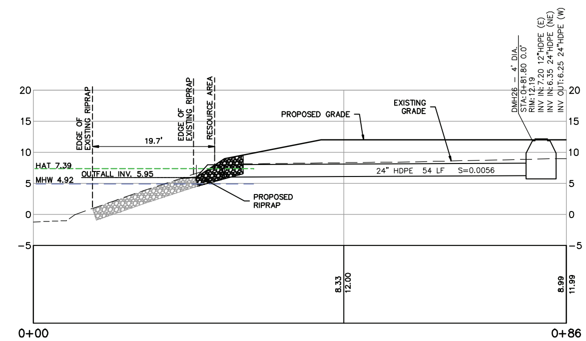


OUTFALL 1–PROFILE STA. 0+00 TO STA. 0+69

HORIZONTAL & VERTICAL SCALE: 1"=10'



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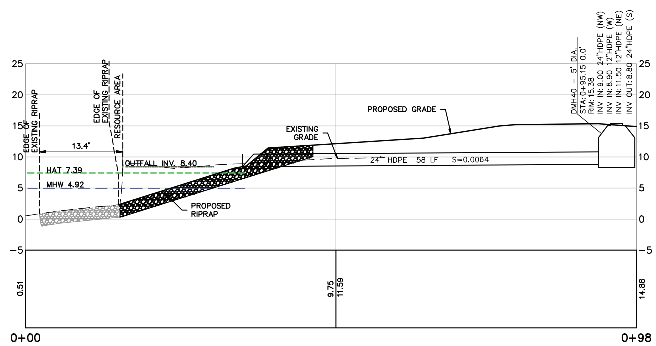
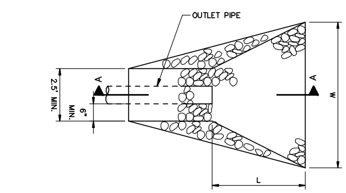
HORIZONTAL & VERTICAL SCALE: 1"=10'



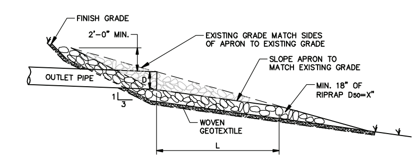
OUTFALL 3–PROFILE STA. 0+00 TO STA. 0+98

HORIZONTAL & VERTICAL SCALE: 1"=10'



PLAN

OUTFALL	PIPE DIA. (D, IN.)	MIN. LENGTH (L, FT.)	MIN. WIDTH (W, FT.)	MIN. D50 (X, IN.)
1	30"	12'	10'	12"
2	24"	9'	8'	9"
3	24"	9'	8'	9"



SECTION A–A

RIPRAP INLET/OUTLET PROTECTION

N.T.S.

BAR SCALE
1" = 10'
CHECK GRAPHIC SCALE BEFORE USING

Woodard & Curran
12 Mountfort Street
Portland, Maine 04101
800.426.4262 | www.woodardcurran.com

PE SEAL
STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

CLIENT INFO:
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PORTLAND, MAINE

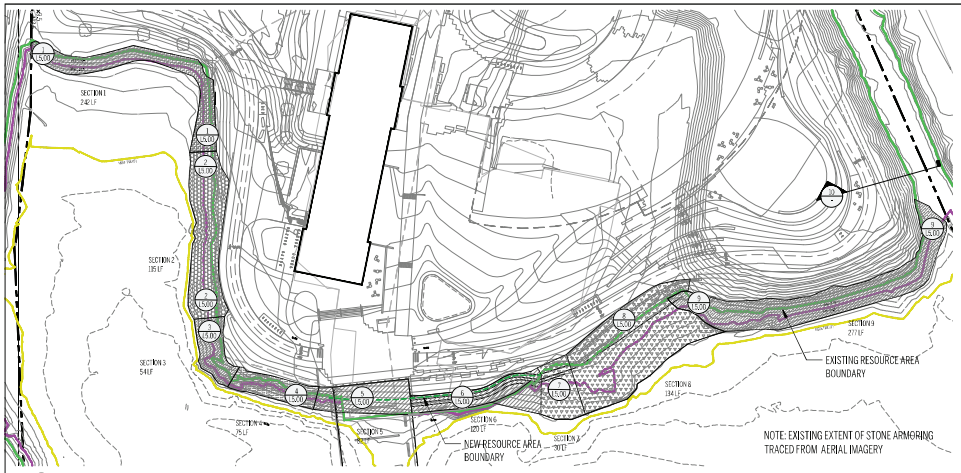
REV	MM/DD/YY	DESCRIPTION

JOB NO:	0233482
DATE:	FEB. 2024
SCALE:	AS NOTED
DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	LJS
FILENAME:	233482-DD-ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS
OUTFALL DETAILS

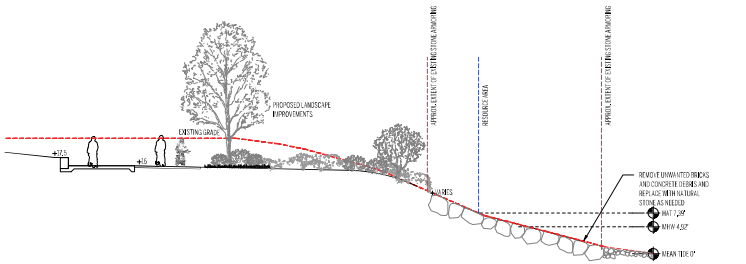
DRAWING NO:
C-6

\\woodardcurran.net\shared\Projects\0233482.00 IDEALS - Roux Institute Project Development\wip\Drawings\Civil\Design Development\233482-DD-ACOE Figures.dwg, Feb 08, 2024 - 5:02pm BMCDEVITT



KEY PLAN
1" = 80'

10
1/8" = 1'-0"



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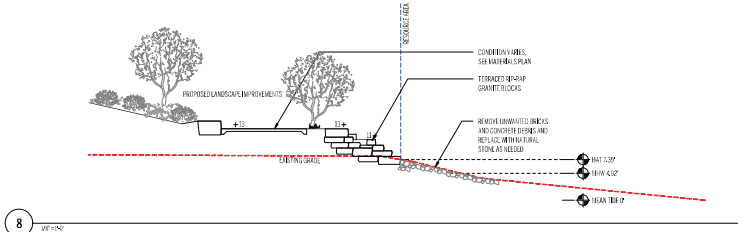

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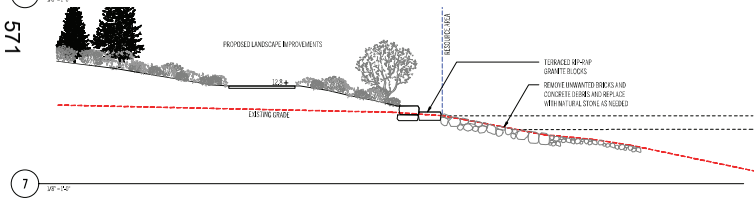

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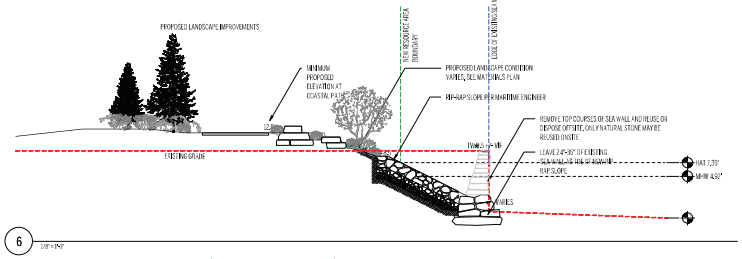

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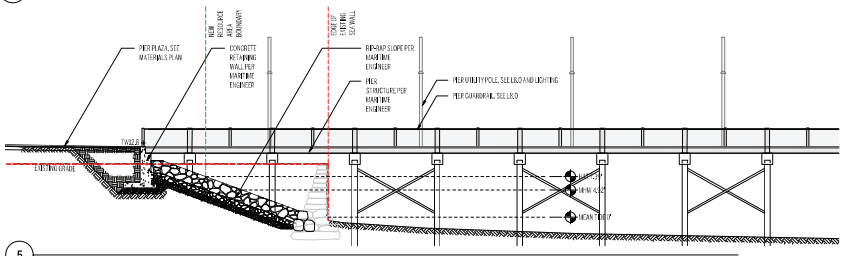

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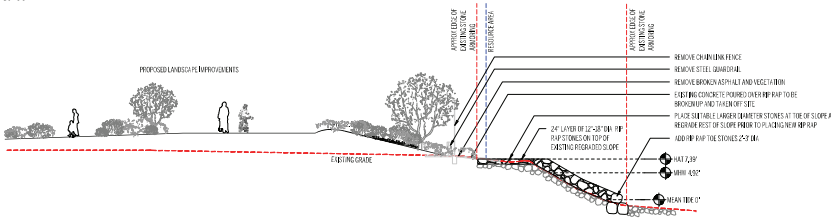

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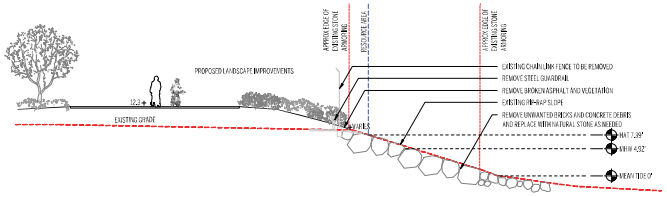

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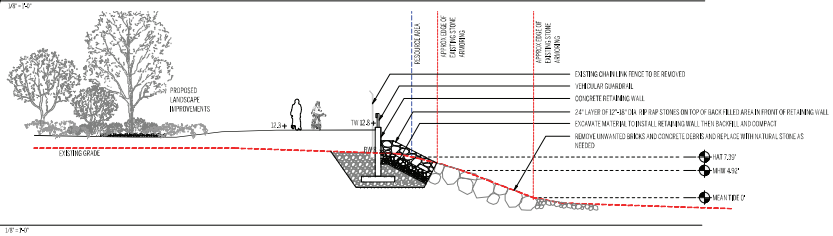

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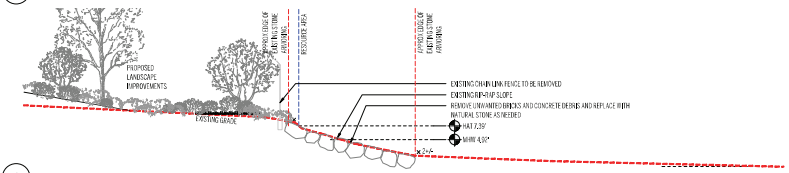

1
1/8" = 1'-0"

571

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

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Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
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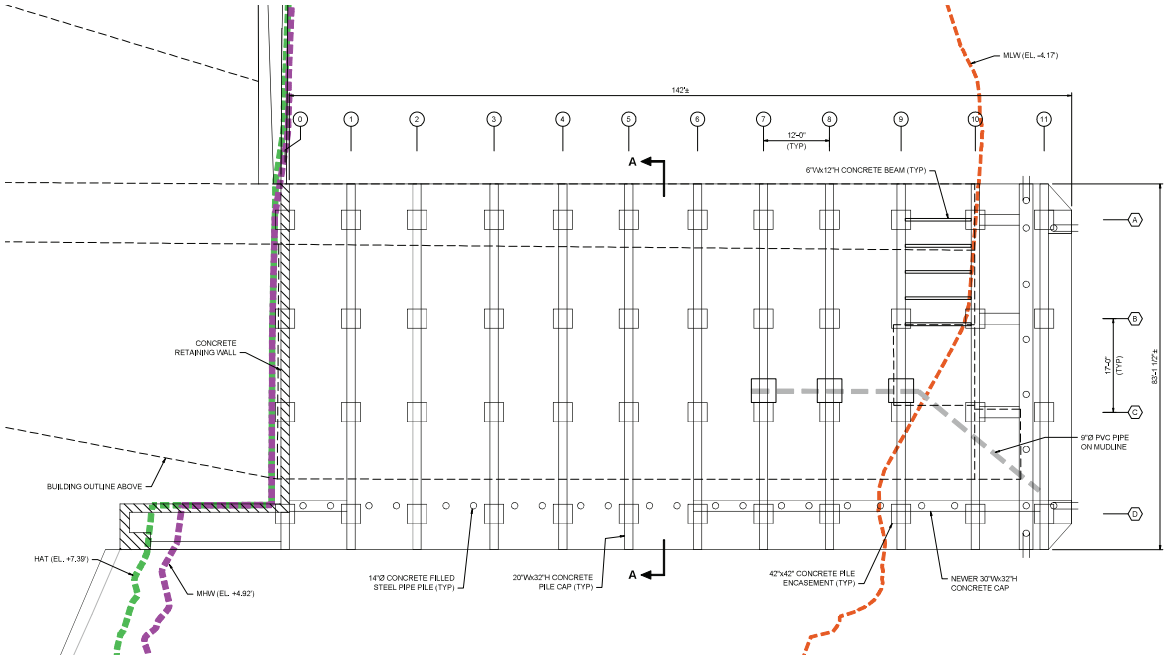
Number	Revision	Date

STEPHEN C. MORRISON No. 3916 STATE OF MAINE

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS Checked STIMSON
Date	05 JANUARY 2024
Scale	AS NOTED

Drawing Title
Shoreline Improvements- Sections

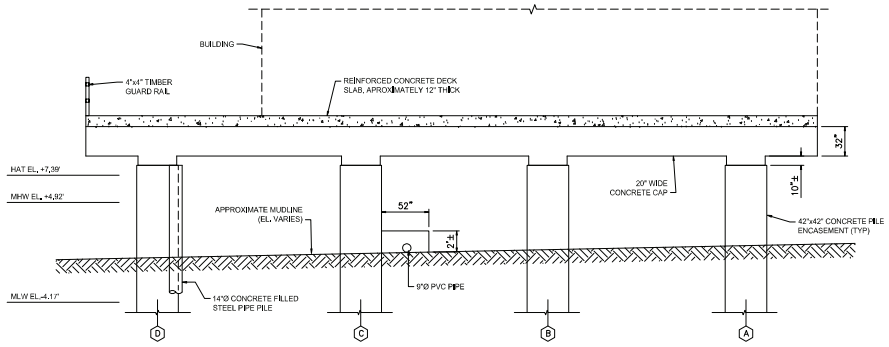
L1



EXISTING PLAN-UNDER DECK

SCALE: 1/8"=1'-0"

SCALE IN FEET



SECTION A-A

SCALE: 1/4"=1'-0"

SCALE IN FEET

572

9/21/2023 1:44:06 PM

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CHILDS ENGINEERING
34 WELLINGTON AV. BELLINGHAM, MA 02019 U.S.A.
Phone: (508) 966-2552
E-mail: mail@childseng.com

DESIGN DEVELOPMENT

Number	Revision	Date

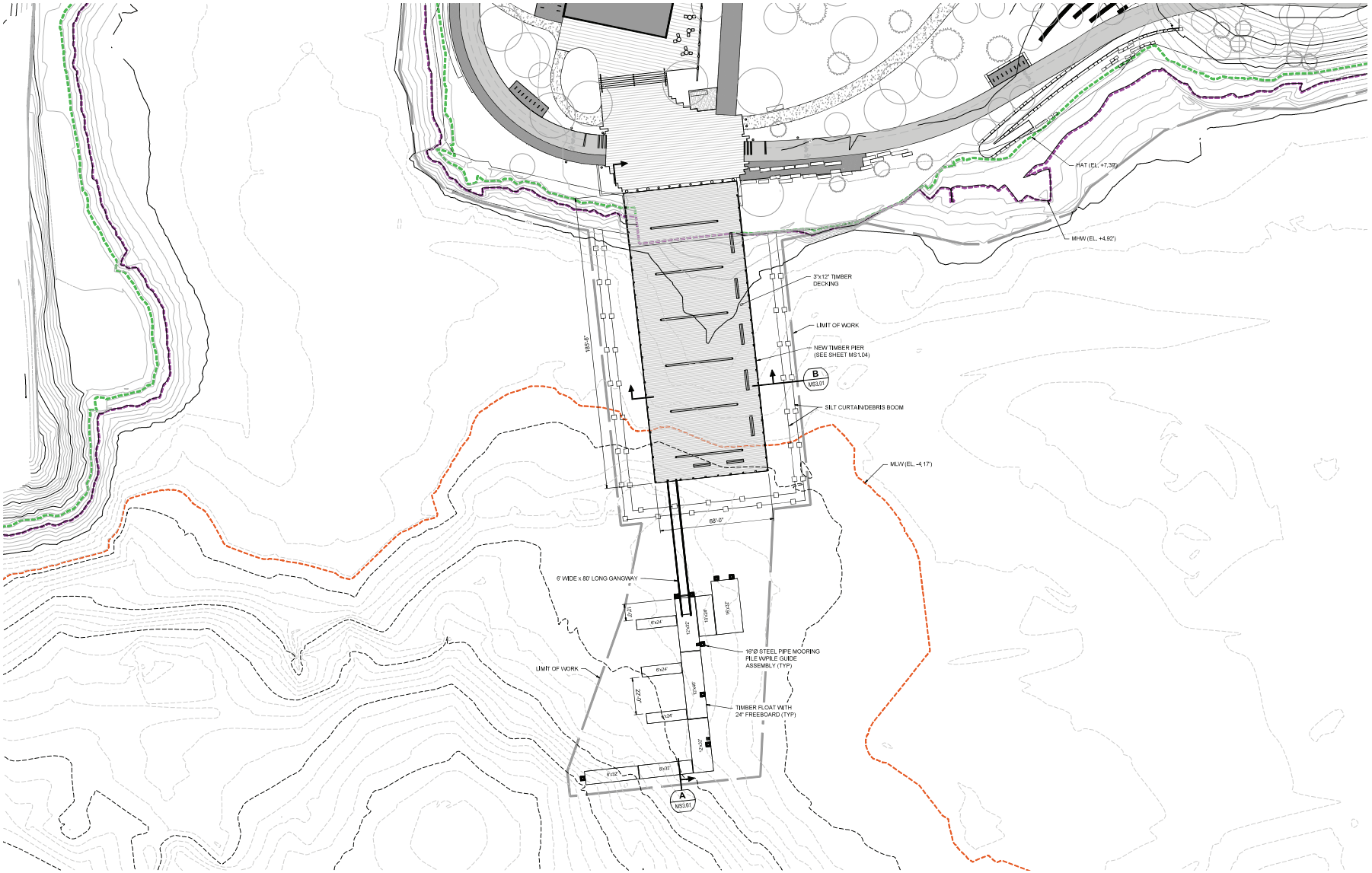
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	TEQ
Checked	CMR
Date	19 OCTOBER 2023
Scale	1/8"=1'-0"

Drawing Title

EXISTING PIER PLAN AND SECTION

MS1.02



PIER AND FLOAT PLAN

SCALE: 1"=20'-0"

20 0 20 40

SCALE IN FEET

573

9/21/2023 1:44:05 PM

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34 WILLIAM WAY, BELLINGHAM, MA 02019 U.S.A.
Phone: (508) 966-0900
E-mail: mail@childseng.com

DESIGN DEVELOPMENT

Number	Revision	Date

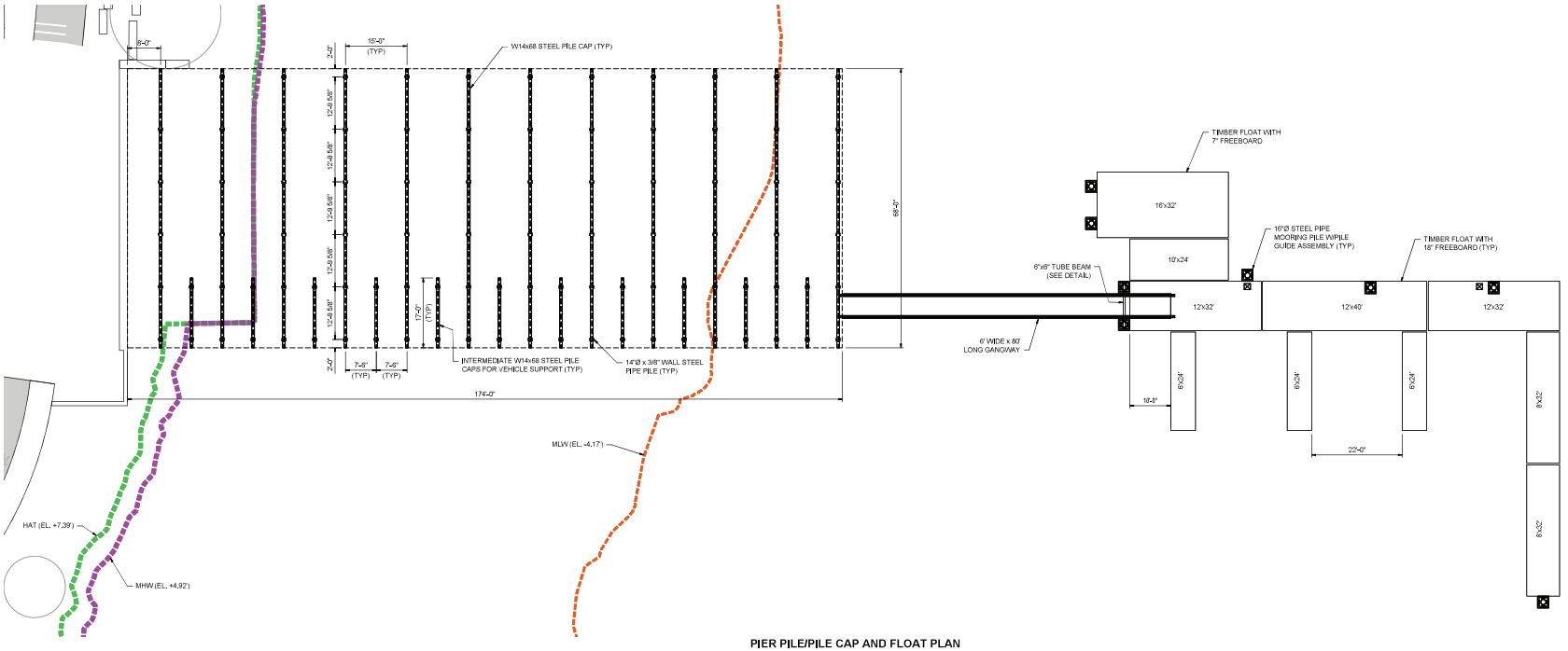
COMMONWEALTH OF MASSACHUSETTS
CHARLES M. MARSHALL ROBERTS
No. 19804
REGISTERED PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	TEQ
Checked	CMR
Date	19 OCTOBER 2023
Scale	1"=20'-0"

Drawing Title
PROPOSED MARINE PLAN

MS1.03

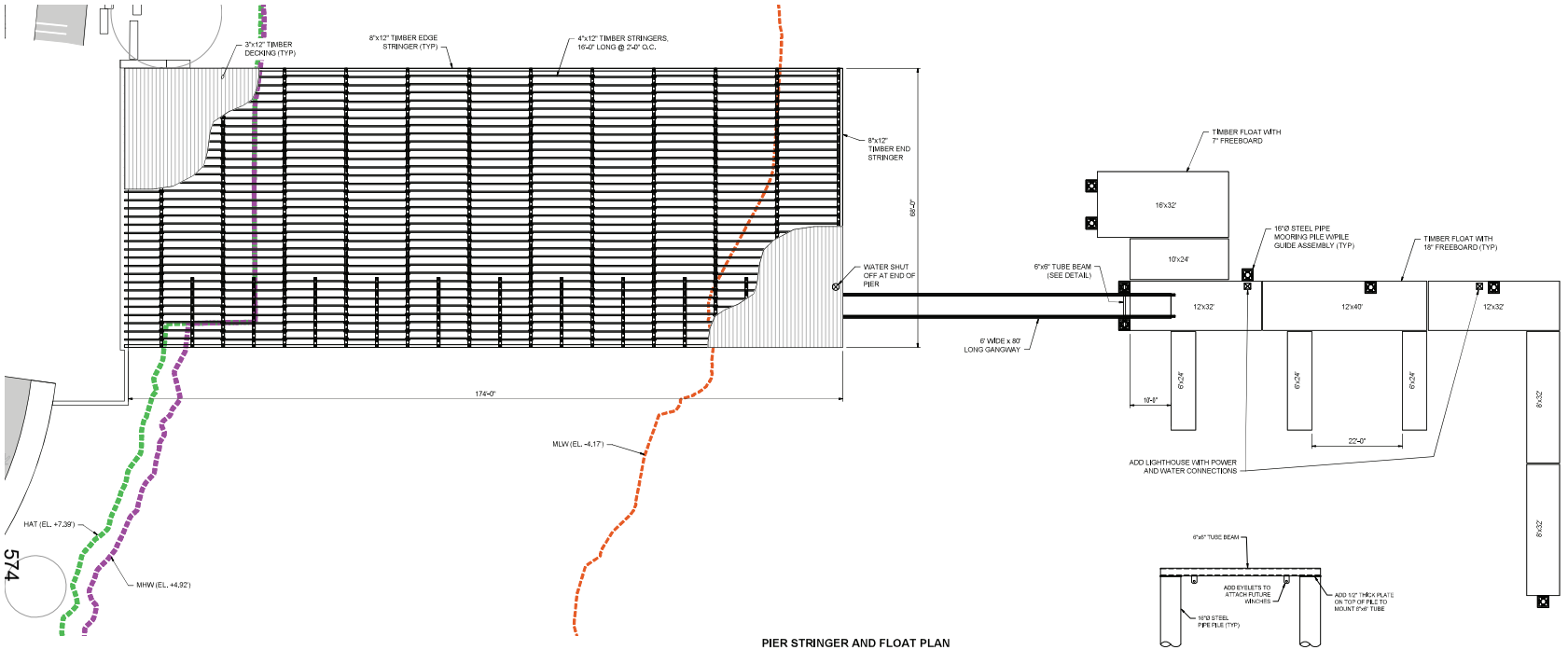


PIER PILE/PILE CAP AND FLOAT PLAN

SCALE: 1"=10'-0"

10 0 10 20

SCALE IN FEET



PIER STRINGER AND FLOAT PLAN

SCALE: 1"=10'-0"

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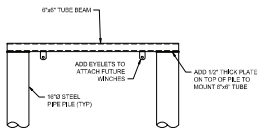
SCALE IN FEET



6"x6" TUBE - ELEVATION

SCALE: 3/8"=1'-0"

574

9/21/2023 1:44:05 PM

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Phone: (508) 966-2552
E-mail: mail@childseng.com

DESIGN DEVELOPMENT

Number	Revision	Date

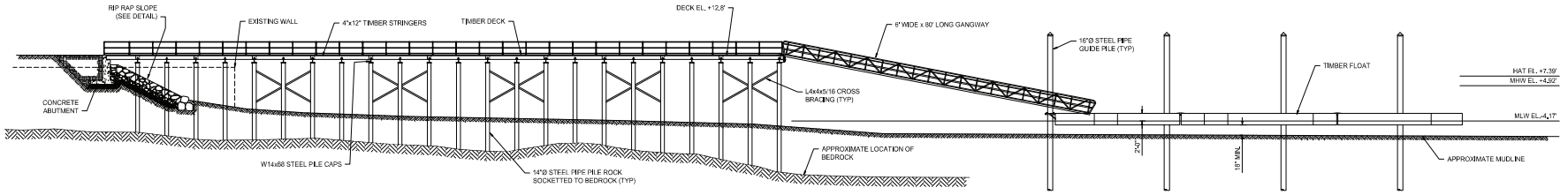
CHARLES M. RUSSELL NUMBER 16854 REGISTERED PROFESSIONAL ENGINEER STATE OF MAINE

Stamp	
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	TEQ
Checked	CMR
Date	19 OCTOBER 2023
Scale	1"=20'-0"

Drawing Title

PROPOSED PIER AND FLOAT PLAN

MS1.04



A MS1.01 **ELEVATION**
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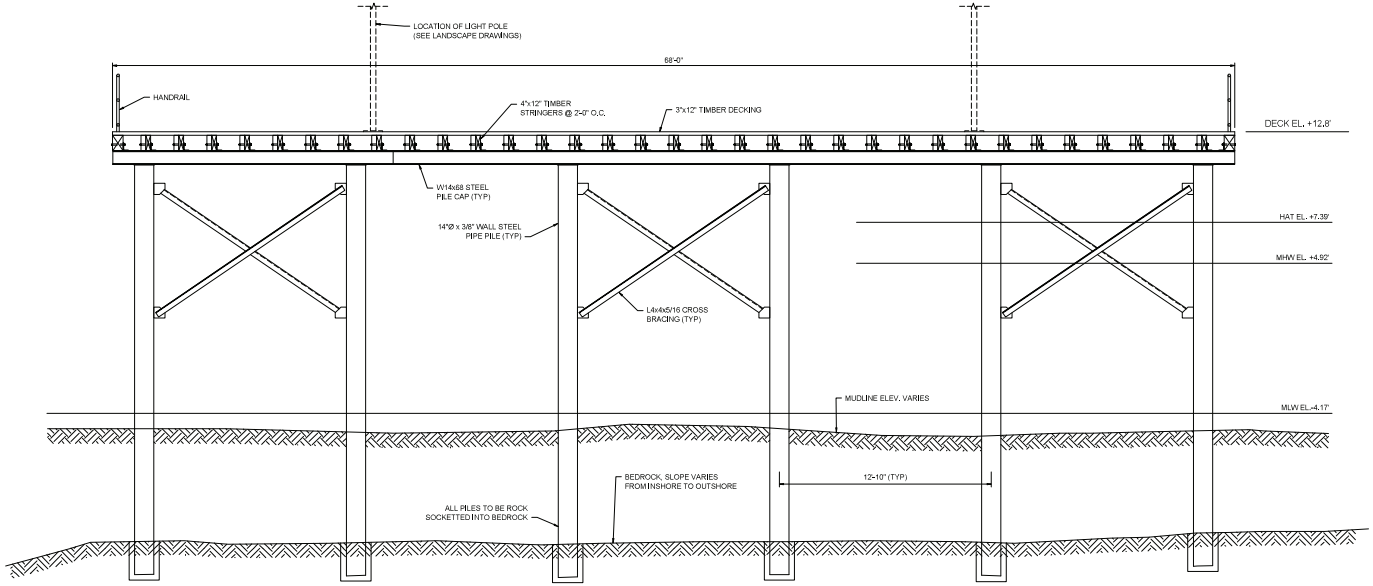
SCALE IN FEET



B MS1.01 **SECTION**
SCALE: 3/8"=1'-0"

2 0 2 4 6
SCALE IN FEET

575

9/21/2023 1:44:06 PM

IDEALS
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34 WELLINGTON WAY BELLINGHAM, MA 02019 U.S.A.
Phone: (508) 966-2900
E-mail: mail@childseng.com

DESIGN DEVELOPMENT

Number	Revision	Date

STATE OF MAINE
CHARLES W. MARSHALL ROBERTS
No. 13804
REGISTERED PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	TEQ Checked CMR
Date	19 OCTOBER 2023
Scale	AS NOTED

Drawing Title
PROPOSED PIER AND FLOAT SECTIONS

MS3.02

MEMORANDUM OF AGREEMENT BETWEEN U.S. ARMY CORPS OF ENGINEERS, THE MAINE STATE HISTORIC PRESERVATION OFFICER, AND NORTHEASTERN UNIVERSITY REGARDING THE NORTHEASTERN UNIVIERSTY ROUX INSTITUTE PROJECT, (USACE PROJECT NO. NAE-2024-00111), OF PORTLAND, MAINE

WHEREAS, the U.S. Army Corps of Engineers (hereinafter "USACE") is reviewing a Department of Army permit application, from Northeastern University (hereinafter "NU") for the NU Roux Institute Project, "the undertaking" pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403, and 404 of the Clean Water Act (33 U.S.C 1344) at 1 Beanpot Circle, Portland, Maine is shown in Attachment A to this Memorandum of Agreement (hereinafter "MOA"); and

WHEREAS, any USACE issuance of a Section 10 and Section 404 permit is subject to review under Section 106 of the National Historic Preservation Act (NHPA), as amended (54 U.S.C. 306108),), which requires federal agencies to take into account the effects of their undertakings on historic properties listed in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council on Historic Preservation ("ACHP") a reasonable opportunity to comment; and

WHEREAS, the undertaking consists of the dismantlement and disposal of the Codfish Building; removal and dismantlement of the remaining concrete pile supported pier; and removal and disposal of associated pipes, and other concrete substructures; the removal and disposal of a failing seawall; the removal and disposal of debris comprised of concrete and bricks; the placement and maintenance of shoreline stabilizations; and the placement and maintenance of a pier, ramp, and float system; and

WHEREAS, the USACE has defined the scope of the undertaking to include the permit area and area of potential effects (APE) as the Codfish Building and pier, its surrounding area and access points, the immediate vicinity of the proposed waterway impact area and proposed waterway impact areas associated with other onsite shoreline stabilizations. The location of the work is within Casco Bay at the mouth of Back Cove; and

WHEREAS, USACE determined that the undertaking will have an adverse effect on the Codfish Building, a property eligible for listing on the National Register of Historic Places, and has consulted with the SHPO pursuant to CFR Part 800, and 33 CFR Part 325, Appendix C, the regulations implementing Section 106 of the NHPA. USACE has determined that the proposed dismantlement of structures, removal of other site infrastructures, removal and disposal of debris, the placement of shoreline stabilizations and the placement of a pier, ramp, and float system shall have an adverse effect to historic properties (defined as listed in or eligible for listing in the National Register of Historic Places (hereinafter "NRHP"); and

WHEREAS, the USACE has consulted with the Aroostok Band of Mi'kmaqs, Houlton Band of Maliseet Indians, the Passamaquoddy Tribe of Indians, and the Penobscot Nation for which the historic properties may have religious and cultural significance and has invited them the to sign this MOA as concurring parties pursuant to 36 CFR §800.6(c)(3); and

WHEREAS, the USACE has consulted with the Maine Historical Society, Greater Portland Landmarks, and the Portland Historical Preservation Board regarding the effects of the undertaking on historic properties and has invited them to sign this Memorandum of Agreement (MOA) as concurring parties pursuant to 36 CFR §800.6(c)(3); and

WHEREAS, in accordance with 36 CFR § 800.6(a)(l), the USACE has notified the ACHP by letter dated April 9, 2024, of its adverse effect determination with specified documentation, and the ACHP has chosen *not* to participate in the consultation pursuant to 36 CFR §800.6(a)(l)(iii); and

WHEREAS, USACE and SHPO are Signatories of this MOA. pursuant to 36 CFR § 800.6(c)(1) and have authority to execute, amend, or terminate this MOA; and

WHEREAS, in accordance with 36 CFR 800.6(c)(2), USACE has invited NU to be invited signatories to this Memorandum of Agreement (MOA); and

NOW, THEREFORE, USACE, SHPO, and NU, agree that the undertaking shall be implemented in accordance with the following stipulations to consider the effect of the undertaking on historic properties. USACE will incorporate the following stipulations as conditions to any Section 404 and Section 10 authorizations to be issued to NU for this project.

STIPULATIONS

NU shall ensure that the following measures are carried out in consultation with the SHPO and shall provide proof of compliance with such measures to USACE and the SHPO:

I. RECORDATION OF HISTORIC RESOURCES

NU will record the Codfish Building, using the "Outline Format" narrative and according to *Maine Historic Building Recordation* (MHBR) standards and the *Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation*. The SHPO has prescribed these standards for the undertaking in the enclosed Schedule of Documentation (Attachment B). Photographs must be sent to the SHPO in hard copy form for approval prior to the commencement of demolition, with a digital copy to the USACE. The SHPO and USACE will have thirty (30) days to review the written and photographic requirements and provide comments. The USACE shall be copied on all correspondence.

II. UNANTICIPATED DISCOVERIES

During the demolition and removal of the Codfish building and pier, NU shall retain a licensed archaeologist onsite should previously unidentified historic properties or artifacts discovered during project construction that may be affected by the undertaking, NU shall notify the signatories of any discovery and cease all work at that location until the requirements of 36 CFR 800.13 and 33 CFR 325, Appendix C have been satisfied.

III. INTERPRETIVE ELEMENTS

Within one (1) year, following completion of the pier and coastal path as proposed, NU shall have in place or be in the final processes of placing interpretive historic elements, as proposed, within the vicinity of the undertaking.

IV. DURATION

This MOA shall be null and void if its terms are not carried out within four (4) years from the date of its execution. Prior to such time, USACE may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation VI, below.

V. MONITORING AND REPORTING

Each year following the execution of this MOA until the work is complete, any permit expires, or any permit is terminated, NU shall provide all parties to this MOA a summary letter report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received by USACE in its efforts to carry out the terms of this MOA.

VI. DISPUTE RESOLUTION

At any time during the implementation of the measures stipulated in this MOA, should an objection to any such measure or its manner of implementation be raised by a signatory, USACE will notify all signatories to the agreement, take the objection into account, and work as needed to resolve the objection. The disputing signatory Parties will first strive to resolve matters informally. If the signatories cannot agree regarding the dispute, USACE shall then initiate appropriate actions in accordance with the applicable provisions of 36 CFR 800.

VII. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment shall be effective on the date a copy signed by all the signatories is filed with the ACHP.

VIII. TERMINATION

If any signatory to this MOA determines that its terms shall not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation VI, above. If within thirty (30) days an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing the undertaking, USACE must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, consider, and respond to the comments of the ACHP under 36 CFR § 800.7. USACE shall notify the signatories as to the course of action it shall pursue.

Execution of this MOA by USACE, SHPO, and NU, and implementation of its terms, is evidence that USACE has considered the effects of this undertaking on historic properties and satisfied its obligations under Section 106 of the NHPA.

(Signatures to follow)

SIGNATORIES:

Tammy R. Turley — Aug 21, 2024

Tammy R. Turley
Chief, Regulatory Division
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742 (978) 318-8174
Tammy.R.Turley@usace.army.mil

Date

Kirk A. Mohney — 8/21/2024

Kirk Mohney
Director and State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, Maine, 04333 (207) 287-3811
kirk.mohney@maine.gov

Date

INVITED SIGNATORY:

Catherine Walsh — August 6, 2024

Catherine Walsh
Associate Vice President of Fiscal & Management Services
Northeastern University
360 Huntington Ave 216-201
Boston, Massachusetts, 02115 (617) 594-6092
c.walsh@northeastern.edu

Date

CONCURRING PARTY:

_____ _____

Jenny Gaenzle, THPO Director
Mi'kmaq Nation
7 Northern Road
Presque Isle, ME 04769 (207) 764-1972 ext. 161
jgaenzle@micmac-nsn.gov

Date

CONCURRING PARTY:

_____ _____

Donald Soctomah, THPO Date
Passamaquoddy Tribe of Indians
Pleasant Point Reservation
PO Box 343
Perry, ME 04667 (207) 853-2600
soctomah@gmail.com

CONCURRING PARTY:

_____ _____

Isaac St. John, THPO
Houlton Band of Maliseet Indians
88 Bell Road
Littleton, ME 04730 (207) 532-4273 ext. 202
istjohn@maliseets.com

Date

CONCURRING PARTY:

_____ _____

Donald Soctomah, THPO
Passamaquoddy Tribe of Indians
Indian Township Reservation
PO Box 301
Princeton, ME 04668 (207) 796-2845 ext. 17
soctomah@gmail.com

Date

CONCURRING PARTY:

_____ _____

Chris Sockalexis
Tribal Historic Preservation Officer
Penobscot Nation
12 Wabanaki Way
Indian Island, ME 04468 (207) 817-7471
Chris.Sockalexis@penobscotnation.org

Date

CONCURRING PARTY:

Evan Schueckler — Date 7/19/2024

Evan Schueckler
Historic Preservation Program Manager
City of Portland
389 Congress Street, 4th Floor.
Portland, ME 04101 (207) 756-8023
evans@portlandmaine.gov

CONCURRING PARTY:

_____ _____

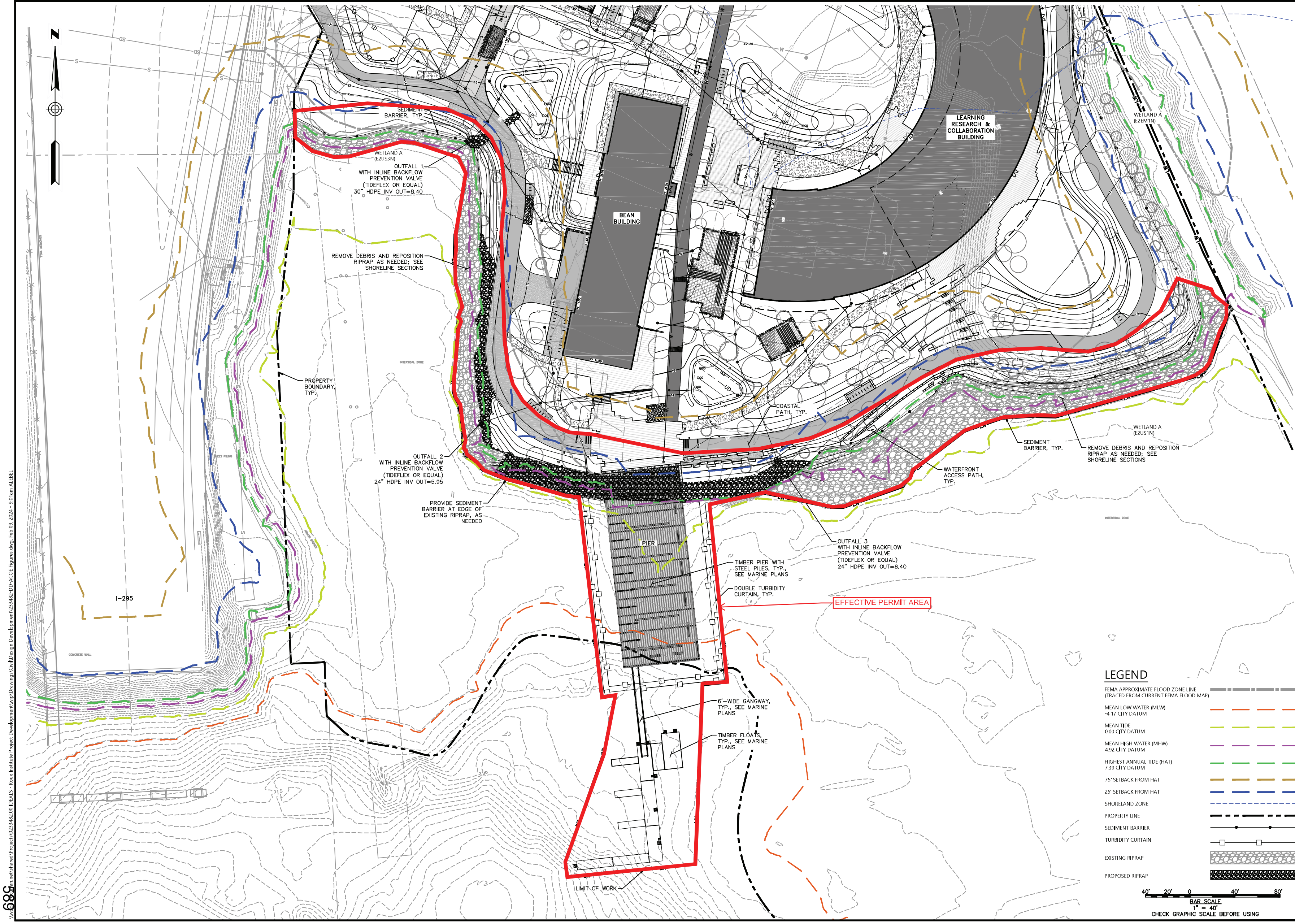
Jamie Rice
Deputy Director
Maine Historical Society
489 Congress Street, Suite 2
Portland, Maine 04101
207-774-1822x219
jrice@mainehistory.org

Date

CONCURRING PARTY:

Kate Lemos McHale
Executive Director
Greater Portland Landmarks
511 Congress Street, Suite 107
PO Box 17533
Portland, ME 04101
info@portlandlandmarks.org

August 8, 2024
Date



LEGEND

- FEMA APPROXIMATE FLOOD ZONE LINE (TRACED FROM CURRENT FEMA FLOOD MAP)
- MEAN LOW WATER (MLW) -4.17 CITY DATUM
- MEAN TIDE 0.00 CITY DATUM
- MEAN HIGH WATER (MHW) 4.92 CITY DATUM
- HIGHEST ANNUAL TIDE (HAT) 7.39 CITY DATUM
- 75' SETBACK FROM HAT
- 25' SETBACK FROM HAT
- SHORELAND ZONE
- PROPERTY LINE
- SEDIMENT BARRIER
- TURBIDITY CURTAIN
- EXISTING RIPRAP
- PROPOSED RIPRAP

40' 20' 0 40' 80'
BAR SCALE 1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

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12 Mountfort Street
Portland, Maine 04101
800.426.4262 | www.woodardcurran.com

PE SEAL:
STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

CLIENT INFO:
THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PORTLAND, MAINE

REV	MM/DD/YY	DESCRIPTION

JOB NO:	0233482
DATE:	FEB. 2024
SCALE:	1"=20'
DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	LJS
FILENAME:	233482-DD-ACOE FIGURES.dwg

DRAWING TITLE:
SHORELINE IMPROVEMENTS
EFFECTIVE PERMIT AREA FIGURE

DRAWING NO:
FIGURE 1

22x34

Environmental Summary Sheet

WIN: 28940.10 **Date Submitted: 4/6/2026**
Town: Portland
CPD Team Leader: Danielle Tetreau
ENV Field Contact: Nick Koltai

NEPA Complete: Section 326 MOU Categorical Exclusion (CE) 23 CFR 771.117.c.3, 25, 27 issued on 8/1/2025

Section 106
Review Complete: No Effect - No Properties - SHPO Concurrence 7/24/2025
Section 106 Resources: none

Section 4(f) and 6(f)

Section 4(f)	Section 6(f)
Review Complete - No properties, no use	Review Complete - No takes

Section 7 – Endangered Species Act
Species of Concern: northern long-eared bat: not likely to adversely affect
Roseate tern: no effect
Tricolored bat & monarch butterfly: no jeopardy
**See SP 105 for Environmental Requirements.*

Essential Fish Habitat
Review Complete
Species of Concern: multi-species (coastal) – No substantial adverse effect

Maine Department of Inland Fisheries and Wildlife
Not Applicable Timing Window: Not Applicable

Maine Department of Agriculture, Conservation, and Forestry
Public Lands, Submerged Land Lease: Not Applicable
Maine Land Use Planning Commission: Not Applicable

Maine Department of Environmental Protection
NRPA Permit – Approved 9/6/2024: L-30881-4D-A-N, -4P-B-N, -2F-C-N, -TW-D-N (Northeastern)
**See SP 105 for Environmental Requirements*

Army Corps of Engineers: Clean Water Act.
Pre-Construction Notification Approved 9/17/2024 – NAE-2024-00111 (Northeastern)
**See SP 105 for Environmental Requirements*

Stormwater Review
Review Complete

Hazardous Material Review
Review complete – areas of concern, see SP 203

☒ **Special Provisions Required**

Standard Specification 656-Erosion Control Plan	N/A☐	Applicable☒
Special Provision 105-Environmental Requirements	N/A☐	Applicable☒
Special Provision 203-Soil Management	N/A☐	Applicable☒

**All permits and approvals based on plans/scope as of: 3/17/2025*