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

Janet T. Mills
GOVERNOR

Bruce A. Van Note
COMMISSIONER

January 29, 2021
Subject: International Bridge Rehabilitation
State WIN: 021736.00
Location: **Madawaska & Edmundston, Canada**
Amendment No. 3

Dear Sir/Ms.:

Please make the following changes to the Bid Documents:

In the Bid Book:

ADD the attached "New Brunswick – PERMIT FOR WATERCOURSE AND WETLAND ALTERATION – ALT 49032'20 Original", 3 pages, dated 2021/01/27.

ADD the attached "SPECIAL PROVISION – SECTION 108 – PAYMENT – (Steel Cost Adjustment), 2 pages, dated January 29, 2021.

REMOVE page 74, 2020 Fair Minimum Wage Rates – Heavy & Bridge Aroostook County, and **REPLACE** with the attached 2021 Fair Minimum Wage Rates – Heavy & Bridge Aroostook County.

On page 77, SPECIAL PROVISION – SECTION 104 – GENERAL RIGHTS AND RESPONSIBILITIES – (Reserved Limits), in the second paragraph, **CHANGE** the word "parcel" to read "**item**". Make this change in pen and ink.

REMOVE pages 197 - 220, SPECIAL PROVISION – SECTION 501 – FOUNDATION PILES – (Drilled Shafts), 24 pages, dated November 17, 2020 and **REPLACE** with the attached, revised SPECIAL PROVISION – SECTION 501 – FOUNDATION PILES – (Drilled Shafts), 24 pages, dated January 29, 2021.

In the Plan Set:

The following sheets are to be **REMOVED** from the existing plan set and then **REPLACED** with the corresponding attached revised sheets:

REMOVE sheet	and **REPLACE** with sheet
2	2
6	6
7	7

8	8
9	9
50	50
51	51
59	59
60	60
87	87
99	99
100	100
101	101
130	130
133	133
134	134
148	148
149	149
150	150

The following questions have been received:

Question: The CN rail requirements (Schedule C) seek a "Project Wrap-Up Liability Insurance subject to limits of not less than $25,000,000 per occurrence…". There may be a difference between Canadian and US insurance terms of art, but "Wrap-up" in US terms usually means an Owner (or sometimes Contractor) Controlled Insurance Program (OCIP or CCIP), which are only typically contemplated with extremely large projects and involve a substantially longer planning / marketing process for either the Owner or the Contractor. The project insurance requirements from the MDOT do not contemplate an OCIP or CCIP for this project and thus there is a conflict. Our assumption would be that an OCIP or CCIP is not intended for this project. Alternative to a "Wrap-up", we can provide a $5M/$10M Railroad Protective policy in name of CN Rail, as well evidence up to $25M Excess Liability on our core insurance program, with an Additional Insured endorsement and a Designated Project General Aggregate Limit endorsement. This combination of policies and endorsements should adequately address the coverage concerns of CN Rail without the need to market an expensive Wrap-up program applicable to only a small portion of the work. Will this be acceptable?

Response: CN will accept an RPL (Railroad Protective Liability) policy for this project with CN shown as the Named Insured and with limits of $10M/$20M for this project. Please ensure that the RPL will have a full description of the job and that it will not contain any exclusions with respect to the construction activity being undertaken.

In addition the following items shall be endorsed on the liability policy:
Supplier shall provide CN a certificate of insurance evidencing the above and, on all policies where applicable, must include the following:

i) a waiver of subrogation in favour of Canadian National Railway Company and its subsidiaries;
ii) name Canadian National Railway Company and its subsidiaries as additional insured;
iii) contain severability of interest clause and contain no cross liability exclusion;

iv) contain a clause stating that CN's interests will not be prejudiced in the event the First named insured breaches any warranty of the policy;
v) provide a 30-day written notice of cancellation or material change in coverage;
vi) all insurance policies required in this Agreement must be written by Insurers having an AM Best rating of A- or higher, be primary, not contributory and not concurrent or excess over other valid insurance which may be available to CN.

Question: Special Provision Section 203 indicates Dredge Material to be dispose of at a landfill licensed by the Maine Department of Environmental Protection. Please confirm that it is acceptable to dispose dredge materials excavated and accessed from the Canadian side at an approved location in New Brunswick.

Response: The Contractor has two options for disposing of dredge material:

1. Contractor shall dispose of material at a facility licensed by the State of Maine or the Province of New Brunswick for the management of dredge material. The Contractor shall be responsible for making all necessary arrangements for dewatering and proper management of the Dredge Material, including any laboratory testing, in accordance with the facility's license. The Contractor shall provide documentation to the Resident that the Dredge Material was managed as specified. The submitted documentation shall consist of truck manifests, waybills, or such documentation as may be acceptable to the Resident and shall clearly document the management site location and the quantity of Dredge Material. The test results of the dredge analysis can be made available to the Contractor upon request for vetting by the chosen site. The Departments of Transportation assume no responsibility.

2. Disposal on an appropriate parcel of property in NB (not recommended due to the approvals required and the risk of delays). Such a property used for disposal will be considered an "Ancillary Facility" and the associated regulatory approval requirements are listed in Section 8. of ***Special Provision Section 105 – General Scope of Work (Environmental Requirements),*** *and* ***Condition 7. of the Environmental Impact Assessment (EIA) Certificate of Determination.*** *These requirements include as a minimum field surveys for environmental constraints (vascular plant survey, bird survey, wetland survey, aquatics survey, species at risk survey, and archaeological survey) by a qualified environmental services firm, the identification of environmental mitigation measures, the preparation of a sediment disposal plan, the preparation of an EIA addendum with this plan attached, and a review by the EIA Technical Review Committee (TRC), which may include several rounds of questions from the TRC (the review time may last several months).*
In addition, ***NBDELG's guidelines for the Siting and Operation of a Disposal Site on Land*** (https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/LandWaste-TerreDechets/GuidelinesDisposalOfDredgingMaterial.pdf) have be followed. They include a requirement to apply for an ***Approval to Operate*** *from the NBDELG*.
All costs and delays associated with assessment, review, and permitting of proposed ancillary facilities, including any required mitigation, are the sole responsibility of the contractor.

Question: In reference to raw material pricing for this project, in the last 2 months we have seen an approximate increase in costs of raw material in the range of $0.20 to $0.25 per lb. increase with another possible increase from the mills next week. With the volatility of the market at this point along with the unknowns of what will occur in the future, we would like to request the ME DOT initiate a Steel Price Adjustment clause into this project bidding documents similar to what MASS DOT and RI DOT have instituted to protect the fabricator and themselves. This project consists of approximately 3,750 tons of structural steel, some of which is HPS 70W material which is much higher priced so the exposure we could face, depending on what the market does prior to us placing a mill order could result in hundreds of thousands of dollars in added costs to us once the bid time/award time has passed.

Response: Upon this request MaineDOT will be implementing a steel escalator, please see attached Special Provision 108 Steel Escalator.

Question: (dwg 87) Utility conduits (2 – 4" FRE conduits) are to be installed between G2 & G3. Plans do not appear to show additional utility support angles between these girders. Canadian Electrical Code requires maximum 3m between support spacing. Please confirm support spacing in this area.

Response: The two noted conduits, located between girders G2 and G3, are to be removed from this contract in their entirety. This includes underground portions of these conduits, associated utility blockouts within the abutment backwalls, conduit supports connected to the cross frames, and estimated quantities. Revised Plan Sheets are provided with this amendment.

Question: (dwg 87) Will utility support members be pre-drilled for installation of conduit hangers?

Response: Holes in the girder webs and utility support members shall be pre-drilled to accept the Contractor's selected utility conduit and hanger system. The necessary hole sizes and spacing shall be shown on the Structural Steel Girder Shop Drawings for review. This is a coordination item between the Contractor, their conduit vendor, and steel fabricator prior to submitting Shop Drawings.

Question: (dwg 153) Please specify type of conduit to be used for aesthetic lighting. No detail shown for mounting conduit and light fixtures to underside of bridge deck. Are any type of stainless steel anchors acceptable? Would placing conduit and junction boxes inside the bridge deck be acceptable?

Response: The aesthetic lighting conduit and junction boxes may be exterior-mounted to the deck, as shown on the Plans, or embedded into the concrete curb and sidewalk, and as follows:

- Exterior-mounted: The conduits shall be IPS/XW Champion Fiberglass conduits, or an approved equivalent. The mounting system shall be ASTM A316 stainless steel clamps supported as closely to the underside of the deck as feasible, and anchored to the deck with an ASTM A316 stainless steel anchor bolt. The exact hanger type is the responsibility of the Contractor.

- Embedded: The conduits shall be non-metallic conduits, installed in accordance with Standard Specification Section 626, and embedded within the concrete curb and sidewalk.

Question: This is a four year project, are the Minimum Fair Wage Rates for Heavy & Bridge for Aroostook County subject to change during the project?

Response: The Minimum Fair Wage Rates for Aroostook County are set for the year the project is awarded. It will not change throughout the execution of the Contract.

Question: Can steel that will remain as a permanent part of the work be fabricated in Canada if the fabricators use material that is sourced and manufactured in the United States? If this is acceptable, will fabrication shops with the Canadian equivalent of AISC/AWS certifications be acceptable as fabricators?

Response: No. The Buy America provision does not provide for a foreign fabricator to import U.S. steel to be fabricated and shipped back to the U.S. This includes steel plate and rebar.

Question: Will concrete suppliers based in Canada with the Canadian equivalent of ACI certifications be allowed to supply concrete for the project?

Response: Yes. ACI CSA-Based Concrete Field-Testing Technician-Grade I is considered an equivalent certification. Canadian Technicians will need to follow AASHTO testing and requirements.

Question: Section 104 (Special Provision Page 77) refers to "…parcel 4…" on the ROW sheets. The ROW sheets do reference some "parcels" but the only reference to #4 is "Item No. 4". We presume "Item No. 4" is "Parcel No. 4". Please confirm.

Response: Item 4 and Parcel 4 are the same. See above pen and ink changes to SPECIAL PROVISION – SECTION 104 – GENERAL RIGHTS AND RESPONSIBILITIES – (Reserved Limits).

Question: In reference to bid item 203.2318 â€“ DISPOSAL OF SPECIAL WASTE, where is dredges material removed from the Canadian side of the bridge to be taken for disposal? Does is have to be imported to Maine?

Response: The Contractor has two options for disposing of dredge material:

1. Contractor shall dispose of material at a facility licensed by the State of Maine or the Province of New Brunswick for the management of dredge material. The Contractor shall be responsible for making all necessary arrangements for dewatering and proper management of the Dredge Material, including any laboratory testing, in accordance with the facility's license. The Contractor shall provide documentation to the Resident that the Dredge Material was managed as specified. The submitted documentation shall consist of truck manifests, waybills, or such documentation as may be acceptable to the Resident and shall clearly document the management site location and the quantity of Dredge Material. The test results of the dredge analysis can be made available to the Contractor upon request for vetting by the chosen site. The Departments of Transportation assume no responsibility.

2. Disposal on an appropriate parcel of property in NB (not recommended due to the approvals required and the risk of delays). Such a property used for disposal will be considered an

"Ancillary Facility" and the associated regulatory approval requirements are listed in Section 8. of ***Special Provision Section 105 – General Scope of Work (Environmental Requirements),*** *and* ***Condition 7. of the Environmental Impact Assessment (EIA) Certificate of Determination.*** *These requirements include as a minimum field surveys for environmental constraints (vascular plant survey, bird survey, wetland survey, aquatics survey, species at risk survey, and archaeological survey) by a qualified environmental services firm, the identification of environmental mitigation measures, the preparation of a sediment disposal plan, the preparation of an EIA addendum with this plan attached, and a review by the EIA Technical Review Committee (TRC), which may include several rounds of questions from the TRC (the review time may last several months).*

In addition, ***NBDELG's guidelines for the Siting and Operation of a Disposal Site on Land*** (https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/LandWaste-TerreDechets/GuidelinesDisposalOfDredgingMaterial.pdf) have be followed. They include a requirement to apply for an ***Approval to Operate*** *from the NBDELG*.

All costs and delays associated with assessment, review, and permitting of proposed ancillary facilities, including any required mitigation, are the sole responsibility of the contractor.

Question: In reference to the access easement designated at Bridge Avenue as shown on Plan Sheet 158, will the existing Land Port of Entry canopy be removed by others prior to the start of the existing bridge demolition in 2024? Can the existing road be excavated within this easement?

Response: Negotiations with the property owner for access for bridge demolition is on-going. It is undetermined at this time when the canopy will be removed or who will be responsible for this work. The right for the Contractor to excavate within the property owner's easement over the State Highway easement is part of this negotiation.

Question: In reference to the excavation for constructing pier 1, is it the intent for the backfilling of the pier to be with the earth material excavated, or is granular borrow to be used for backfill?

Response: Pier excavations may be used as backfill, beneath the Heavy Riprap, provided the excavated material meets the requirements of Granular Borrow.

Question: Will the geotextile fabric and heavy riprap shown in the riverbank section on Drawing 19 be allowed to be placed in the wet or will this area be required to be dewatered and work performed in the dry?

Response: Placement of the geotextile and heavy riprap may be performed in the wet.

Question: Special Provision Section 610.02 Materials directs the Contractor to sample their identified riprap quarries for sulfide-bearing rock (SBR). Our testing agency is not familiar with this test. Please provide an ASTM testing reference or procedure or other recognized testing procedure for determining SBR.

Response: The testing agency RPC (in Fredericton , N.B.), performs propriety testing for % Total Sulphur and Modified Sobec Acid Base accounting procedures, specifically to meet the NBDTI protocol. Samples acquired from the American portion of the project may be sent for testing to:

Attention: Scott MacDonald
NB Department of Transportation and Infrastructure
Soils and Minerals Building
975 College Hill Road
Fredericton NB, E3B 4J7
Canada

Tests will be conducted, processed and results will be reported back to the MaineDOT Resident.

Question: In reference to the attached Plan Sheet Number 157, Right Of Way Map, can the temporary construction limits be extended to include the area highlighted in blue, if the existing rail car within this area is relocated at the contractors expense?

Response: No, the Department will not negotiate additional rights with the property owner. The awarded Contractor may, at its own expense, negotiate with the property owner for additional access per 104.3.2 of the Standard Specifications.

Question: Please clarify if the removal of the existing garage, and associated lighting/poles at Abutment 2 are included in this contract, or to be removed by others. If by others, please indicate when the removal is scheduled to be completed.

Response: The garage and light poles are to be relocated by others in a separate contract to be tendered by NBDTI. The current plan is to perform this work in early 2021, pending an agreement with CBSA.

Question: Sheet 71 – Can the bundles of #11 rebar in the drilled shafts be replaced with a single #18 bar to allow for better concrete flow and large clear space between rebar?

Response: Single #18 bars may be used in-lieu of two, bundled #11 bars provided the ends of the #18 bars within the pile cap are hooked or anchored to fully develop the yield strength of the #18 bars within the pile cap. The Contractor shall submit calculations, stamped by a Professional Engineer licensed in the State of Maine, for their proposed changes related to hooked ends and/or anchorages associated with a #18 bar. No additional payment will be made for the added weight of rebar associated with this allowance.

Question: Spec 501.046 – The specification calls for continual concrete placement until quality concrete flows out of the top of the casing. Due to top of shaft being below water and casing extending up to surface during pouring it is not possible to overflow the casing without pouring concrete all the way up to the surface. Propose modifying this to allow for pouring concrete high inside the casing and chipping out and unsatisfactory concrete prior to cap concrete placement.

Response: The required construction sequence has been altered. Please refer to the attached, revised SPECIAL PROVISION – SECTION 501 – FOUNDATION PILES – (Drilled Shafts).

Question: Spec 501.045 states concrete tremie pipes shall be minimum 12 inch diameter. Please consider modifying this to 10 inche diameter, which would satisfy the requirements in spec 501.02 and 501.046 that call for tremie diameter to be at least 6 times the max aggregate diameter.

Response: The 12-inch minimum diameter requirement, identified in Subsection 501.045 of SPECIAL PROVISION – SECTION 501 – FOUNDATION PILES – (Drilled Shafts), has been removed. Please refer to the attached, revised Special Provision. Note that Subsection 501.046 requires a 10-inch minimum tremie pipe diameter.

Question: Spec 501.02 calls for 1" casing thickness and drawing sheet 71 calls for ¾" casing thickness. Confirm which thickness is the minimum required by design.

Response: Subsection 501.02 of SPECIAL PROVISION – SECTION 501 – FOUNDATION PILES – (Drilled Shafts) indicates the casing shall have a minimum thickness of ¾". Note that draft versions of this special provision, prior to project advertisement, may have erroneously identified a 1-inch casing.

Question: Please confirm all shafts with be TIP tested first, and any deficiencies found in the TIP testing will then be further explored with CSL testing.

Response: All drilled shafts will be subject to Thermal Integrity Profiling (TIP) testing. Crosshole Sonic Logging (CSL) testing will be conducted in the event of an indication of discontinuities, anomalies or defects in a shaft from the TIP results, or in the event of thermal wire damage or malfunction. Refer to Subsection 501.047 of SPECIAL PROVISION – SECTION 501 – FOUNDATION PILES – (Drilled Shafts).

Question: Spec 501.011 defines Obstructions to include boulders. Will boulders that are shown on the borings at Pier 5 still be considered obstructions since they were identified in the boring?

Response: Boulders identified on the boring logs will be considered obstructions if encountered and the definition of Obstructions, as provided in SPECIAL PROVISION – SECTION 501 – FOUNDATION PILES – (Drilled Shafts), is met.

Question: Please confirm the Department will provide all TIP wires, install them and conduct TIP testing.

Response: Confirmed. The Department will provide and install all Thermal Integrity Profiling (TIP) wires as well as conduct the testing.

Question: Please confirm all costs for CSL pipe install and any directed testing will be the responsibility of the Contractor.

Response: Confirmed. The Contractor shall bear all costs associated with Crosshole Sonic Logging tests.

Question: Is Item 508.14 HIGH PERFORMANCE WATERPROOFING MEMBRANE to be a torch applied membrane or spray applied membrane? Or is it up to the bidding contractor?

Response: Item 508.14, High Performance Waterproofing Membrane, may either be a torch applied or spray applied system selected from the Department's Qualified Products List.

Question: Are bolt on mechanical couplers allowed for #18 bars in piers #1-#5 (page 73) & #11 bars in the drilled shaft option (page 71) Thank you

Response: Bolted couplers will be accepted to splice the #18 bars in the pier columns and #11 bars in the drilled shafts.

Question: In order to allow proper time to complete delivery, testing and discharge of the concrete trucks, would it be acceptable to increase the specified discharge time to 120 minutes with the use of an approved hydration stabilizing admixture? Dosage of the hydration stabilizing admixture would remain within supplier recommended specification and concrete temperature would remain within the specified limit of 80Â°F.

Response: The use of hydration stabilizing admixtures to increase discharge time is acceptable per Standard Specification for case by case basis. The actual admixture dosage and time increase allowance will be reviewed along with the concrete mix design it is intended to be used with.

Question: Will the soil excavated from the drilled shafts and the cofferdams be considered dredge material / special waste?

Response: All material excavated for construction of Piers 2, 3, 4, and 5, is considered dredge material/special waste including material excavated within cofferdams and for drilled shaft installation.

Question: Have all the permits for the project been procured? If so when will the additional permits be available for review?

Response: No. The Canadian Navigable Waters Act, the International Bridge and Tunnels Act, and the MaineDEP Beneficial Use Permit for dredge material are pending. The Environmental Management Plan is pending, this is not a permit but a condition required under the Environmental Impact Assessment. A lease agreement between Canadian National Railway and the New Brunswick Department of Transportation and Infrastructure is pending and addressed in Special Provision 104 Utilities in New Brunswick, Canada. Approved permits will be provided to the Contractor in a Bid Amendment.

Question: Will a field office need to be located on the Canadian side of the project? If so, which field office type will it be required to be?

Response: Refer to General Construction Note 19 on Plan Sheet 4.

Question: Note #11 under special provision section 105 - Environmental Requirements - appears to indicate that riprap used to armor the channel banks will not be considered sulfide-bearing rock (SBR). Does this mean that this material will be exempt from the requirements outlined under special provision 610 - Sulfide-Bearing Rock?

Response: No. This requirement is intended to indicate riprap used to armor the river embankments shall not contain sulfur above the limits identified in Special Provision 610.

Question: Please confirm that pay item # 507.0823 is to be only galvanized and not color-galvanized.

Response: Correct. Item 507.0823, Steel Bridge Rail, 3 Bar S3-TL4, shall be galvanized but not color-galvanized.

Question: In regards to drilled shafts installation and testing; Would it be acceptable to fill the CSL tubes with a neat cement grout in lieu of the sand cement grout specified?

Response: Neat cement grout may be used in-lieu of sand cement grout to fill the CSL tubes. No change to the drilled shaft Pay Items or payment will be made for such substitution.

Question: Project Health and Safety requirements are not clearly stated in the Contract documents. Is it correct that within the Maine boundaries OSHA requirements are followed?

Response: Correct.

Question: Also, is it correct that within the NB boundaries the NB Occupational Health and Safety Act requirements are to be followed?

Response: Correct.

Question: Will a US company purchasing materials or services for this project from a Canadian company be subject to GST/HST taxes? Can the US contractor apply for a tax refund through Canada Revenue Agency (CRA)?

Response: Yes. US companies must register with a Canadian business number, pay GST/HST, then file returns for input tax credits and taxes paid. Filing returns is required even if the project gets a zero rating for GST/HST. The New Brunswick Department of Transportation and Infrastructure has applied for a zero GST/HST rating. This request is pending and will be issued to the Contractors in a Bid Amendment.

Question: Amendment #2 contained a permit from Fisheries and Oceans Canada, we have the following questions regarding this permit:

i. The permit states that "Only the north abutment, four spans, and three piers (two in water) to be constructed as part of the project are within Canadian jurisdiction and subject to this authorization." Please provide delineation to show what portion of the project is subject to Canadian permits and what portion of the project is subject to American permits.

ii. Section 4 of the permits references "Conditions that relate to offsetting". Please confirm that any offsetting required by this permit is not part of this contract.

Response: The international border delineates the jurisdiction between the United States, State of Maine, Federal Canada, and Province of New Brunswick permits. Offsetting is not part of this contract.

Question: Will this project require countermeasures for the effects of mass concrete? If yes please provide limits that the contractor must adhere.

Response: No specific countermeasures are required to counteract the effects of mass concrete placements. However, all concrete will need to meet the requirements set forth in the Standard Specifications and the Department Approved Contractor's Quality Control Plan.

Question: For work performed in Canada, please confirm that welders certified to CWB - CSA W47.1 will be acceptable in lieu of AWS D1.1.

Response: The CWB is acceptable for the qualification purposes only. All welding procedures, inspection and materials must be in compliance with the current version of the AWS D1.1. A CWB level 2 or 3 welding inspector must oversee all welding. All welding that will be in the permanent works must be in compliance with Buy America which includes welding.

Consider these changes and information prior to submitting your bid on **February 17, 2021**.

Sincerely,

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

PERMIT FOR WATERCOURSE AND WETLAND ALTERATION
ALT 49032'20 Original

(Regulations 90-80 under the Clean Water Act Chapter C-6.1, Act of New Brunswick 1989)

PERMITTEE Department of Transportation and Infrastructure

LOCATIONS

Latitude	Longitude	Datum		Latitude	Longitude	Datum
47.3606	-68.3286	WGS 84	*To*			

Affected Watercourse/Tributary: Saint John River / Fundy, Bay of;

Affected Regions: ENV - 6 **DFO -** GULF **DNR -** 4

1:50,000 Maps - 21 N/08 **County -** Madawaska **Parish -** Madawaska

PERMIT VALID FOR THIS PERIOD FROM 2021/01/27 (yyyy/mm/dd) TO 2025/12/31 (yyyy/mm/dd)

Description of Watercourse/Wetland Alteration(s):

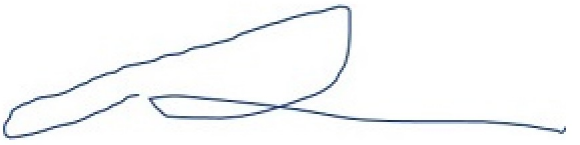
This project consists of constructing a new international bridge spanning across the Saint John River between Edmundston, New Brunswick, and Madawaska, Maine. The new bridge is being constructed upstream of the existing international bridge and is to be a six-span, 556.5 metre long structure. Construction of the bridge is to require in-water temporary work trestles for construction access and sealed temporary cofferdams for in-water pier construction. To avoid ice jams during the spring freshet, trestles are to be put in place in the spring and removed in the fall of each construction year. A three year construction period is anticipated for this phase of the project. This permit covers only the construction work within the Canadian jurisdiction, which is the construction of the north abutment, fours spans, and three piers (two in water). The existing bridge structure is to be decommissioned and removed upon completion of the new bridge. It is anticipated that this phase is to take one year and will also require the use of temporary work trestles. Bridge approaches are to be modified to connect the existing roads to the new bridge.

The project is to be carried out in accordance with the design drawings prepared by HNTB titled "International Bridge over Saint John River".

The Permittee may undertake only those Watercourse/Wetland Alteration(s) described above hereby approved by the Minister. Refer to Conditions of Approval stated on the attached Document "A". Responsibility for any action arising from any watercourse/wetland alteration must be borne by the Permittee and no liability shall be incurred by the Minister or the Department. This permit does not exempt or exclude the Permittee from the provisions of any Act of the Legislature of New Brunswick or of Canada to serve as legal defense to any action commenced by landowners who are adversely affected by the alteration.

Number of conditions attached to this permit: 26

Date of Issuance: 2021/01/27 (yyyy/mm/dd)



for the Minister of Environment and Climate Change

Department of Transportation and Infrastructure

DOCUMENT "A" Attached to ALT 49032'20 Original
CONDITIONS OF APPROVAL

(Regulations 90-80 under the Clean Water Act Chapter C-6.1, Act of New Brunswick 1989)

(1) The project shall be carried out in accordance with the design drawings prepared by HNTB titled "International Bridge over Saint John River", except where stipulated otherwise in these "Conditions of Approval".

(2) All additional conditions listed in the Certificate of Determination (File no.: 4561-3-1517) granted under the New Brunswick Environmental Impact Assessment Regulation shall be strictly adhered to.

(3) If work is to take place outside of DTI's right-of-way, the permittee is responsible for obtaining permission from all landowners listed on the property where the alteration is to take place before commencement of the work.

(4) The permittee is responsible for contacting the local planning commission or City/Town prior to commencing the project to ensure that all local/municipal by-laws are adhered to. The permittee is responsible for obtaining all additional permissions and permits prior to work commencement.

(5) Other than the alterations described on this permit, no additional alteration shall be carried out in or within 30 metres of a wetland or the shoulder of the bank of a watercourse.

(6) A copy of this permit, including the “Conditions of Approval”, shall be kept at the alteration site throughout the duration of the project, and such copy shall be produced upon the request of an inspector designated to act on behalf of the Minister of Environment and Local Government, or an employee of Fisheries and Oceans Canada.

(7) The permittee shall ensure that all persons involved in the project are aware of and comply with the scope, conditions, and environmental constraints of this permit.

(8) The Department of Environment and Local Government – Grand Falls Office (473-7744) shall be notified at least 2 working days prior to project commencement.

(9) When machinery is being used, an appropriate emergency spill kit shall be kept on-site and be readily deployable. Any spill, regardless of quantity, must be reported by contacting the Department of Environment and Local Government during business hours or the National Environmental Emergencies Center (1-800-565-1633) after hours.

(10) Equipment/machinery used shall be in good working order, must not be leaking any fuel, lubricants, or hydraulic fluid and shall be cleaned/degreased to prevent any deleterious substance from contaminating the wetland and to help minimize the spread of invasive plant species.

(11) Machinery used shall be located outside of the wetland and/or the wetted portion of the watercourse. Machinery may enter the watercourse if stationed on a trestle, barge, or ample ice cover.

(12) All materials and machinery used shall be operated and stored/parked in a manner that prevents any deleterious substance (e.g. petroleum products, silt, etc.) from entering a watercourse/wetland.

(13) Fill material added within 30 metres of a wetland or the shoulder of the bank of a watercourse shall be free of contaminants.

(14) Preventative measures shall be taken to prevent demolition debris, spoil, and excavated material generated by the project from entering a watercourse/wetland. Excavated materials shall be disposed of where they cannot be washed into a watercourse/wetland by floodwaters or surface runoff and any debris generated from the project shall be entirely collected and disposed of outside a regulated area, in a manner acceptable to the Department of Environment and Local Government.

(15) Siltation prevention devices competent in quantity, design, diversity, and function to adequately prevent the alterations covered by this permit from having a negative impact on the quality of the stream flow under all runoff conditions, shall be installed prior to exposing erodible soil, and added wherever necessary to prevent sedimentation. These devices shall be maintained such that they perform their intended function until vegetation becomes re-established.

(16) If a siltation prevention device is compromised and/or is not functioning properly, no further work shall take place until the issue is corrected.

(17) Work shall be scheduled to avoid wet, windy, and rainy periods (and weather advisories must be heeded) that may result in high flow volumes and/or increase erosion and sedimentation.

(18) The permittee shall ensure that the end area of the bridge is of adequate size to handle a 1 in 100 year flood event.

(19) Rip-rap shall be clean, durable, non-ore bearing, and non-toxic rock, and must not be obtained from a watercourse nor from within 30 metres of a wetland or the shoulder of the banks of a watercourse.

(20) All treated timbers shall be treated in accordance with the most current Wood Preservation Standards published by Wood Preservation Canada and shall be air dried for the length of time specified by the manufacturer for safe use in, over, or near an aquatic environment. Timber used in, over, or near an aquatic environment shall not be treated with creosote.

(21) Concrete cast-in-place below the waterline shall be isolated from the stream flow and encased in forms until the concrete is fully cured.

(22) Prior to commencing the removal of the existing superstructure, a plan intent on preventing demolition debris from entering the stream flow and suspended sediment generated as a result of construction activities and runoff events, or any combination thereof, from entering the stream flow and being washed downstream, shall be prepared by the contractor and submitted for review and approved by the Department of Environment and Local Government prior to commencing the project.

(23) Following removal of the existing superstructure, the channel restored to its pre-structure cross-section, and all erodible soil capped with rock, or either hydroseeded or seeded by conventional means and blanketed with mulch.

(24) All temporary fill/pads/access shall be completely removed following the removal of the existing superstructure. The footprint of these temporary disturbances shall be completely restored.

(25) Throughout the project, all exposed erodible soil shall be temporarily stabilized with mulch, erosion control blankets or other products designed to prevent erosion and the runoff of suspended sediment into a watercourse/wetland, prior to each forecasted rain event.

(26) Upon final grades being achieved, all exposed erodible soil shall be permanently stabilized with perennial vegetation native to the area and blanketed with mulch. If final grading takes place outside the growing season when perennial vegetation can become re-established, temporary stabilization shall be upgraded to perform its function throughout winter and snowmelt/spring break-up conditions. Wherever temporary over-winter stabilization is used, it shall be replaced with non-invasive perennial vegetation native to the area early in the next growing season.

Madawaska-Edmundston
International Bridge
WIN: 021736.00
January 29, 2021

SPECIAL PROVISION
SECTION 108
PAYMENT
(Steel Cost Adjustment)

This Special Provision was developed to minimize risk to the Contractor and steel fabricator(s) associated with current volatile fluctuations in the cost of steel materials.

Description Steel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in steel prices. All prices and costs are in U.S. Dollars (USD).

Types of Steel Products An adjustment will be made for fluctuations in the cost of plate and rolled-shape steel used in the fabrication of steel for Contract pay items covered under the following sections of the Standard Specification:

- Section 504, Structural Steel
- Section 507, Railings

The adjustments shall apply to the above items when they are part of the original Contract or Extra Work added by Contract Modification and paid for by agreed unit prices. The adjustments shall not apply when the item is Extra Work added by Contract Modification and paid for at a lump sum price or by Force Account.

Documentation Sufficient documentation shall be furnished to the Department to verify the following:

1. The dates on which steel was shipped from the mill to the fabricator, and quantity of steel, in pounds, shipped on those dates.
2. The quantity of steel, in pounds, incorporated into the various pay items covered by this Special Provision. The Department reserves the right to verify submitted quantities.

Method of Adjustment Steel cost adjustments shall be computed as follows:

SCA = Q X D

Where: **SCA** = steel cost adjustment, in USD
Q = quantity of steel incorporated into the work, in pounds
D = price factor, in USD per pound

$$\mathbf{D = MP_B - MP_A}$$

Where: **MP_B** = The Platts Steel Spot Market Prices for Plate, as published by the Engineering News- Record, for the month the steel is shipped from the mill. The price will be converted from USD per ton to USD per pound.

MP_A = The Platts Steel Spot Market Prices for Plate, as published by the Engineering News- Record for January of 2021, for work paid for at the Contract price; or for the month the Contract Modification is signed by the Contractor for Extra Work that is paid for by agreed unit prices. The price will be converted from USD per ton to USD per pound.

The total weight of the steel that will be used to calculate the steel cost adjustment for the respective Pay Items is shown in the following table:

Standard Specification Section	Total Weight of Steel (lbs.)
504, Structural Steel	7,260,000
507, Railings	322,000

No steel cost adjustment will be made for any products manufactured from steel having a mill shipping date prior to the Contract Bid date.

If the Contractor fails to provide the required documentation, the method of adjustment will be calculated as described above; however, the MP_B will be based on the date the steel arrives at the jobsite. In this case, an adjustment will only be made when there is a decrease in steel costs.

Basis of Payment Steel cost adjustments may be positive or negative but will only be made when there is a difference between the MP_A and MP_B in excess of five percent, as calculated by:

Percent Difference = $\{(MP_B - MP_A) / MP_A\} \times 100$

Steel cost adjustments will be calculated by the Department and will be paid or deducted when all other Contract requirements for the applicable items of work are satisfied. Adjustments will only be made for fluctuations in the cost of the steel as described herein. No adjustments will be made for changes in the cost of manufacturing, fabrication, shipping, storage, etc.

The steel cost adjustments shall not apply during any time after the Contract Completion Date when the Contractor is being assessed Liquidated Damages.

Cost adjustments for steel shall be paid for under the following item:

Pay Item	Pay Unit
108.92 Steel Cost Adjustment	Unit

THIS DOCUMENT MUST BE CLEARLY POSTED AT ALL CONSTRUCTION SITES FUNDED IN PART WITH STATE FUNDS

State of Maine
Department of Labor
Bureau of Labor Standards
Augusta, Maine 04333-0045
Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRS §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid to laborers and workers employed on the below titled project.

2021 Fair Minimum Wage Rates
Heavy & Bridge Aroostook County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asphalt Raker	$ 18.38	$ 0.95	$ 19.33	Ironworker - Reinforcing	$ 29.75	$ 7.13	$ 36.88
Backhoe Loader Operator	$ 28.25	$ 12.09	$ 40.34	Ironworker - Structural	$ 26.93	$ 1.54	$ 28.47
Boom Truck (Truck Crane) Operator	$ 26.00	$ 5.20	$ 31.20	Laborer - Skilled	$ 21.13	$ 1.50	$ 22.63
Bulldozer Operator	$ 25.00	$ 2.15	$ 27.15	Laborers (Helpers & Tenders)	$ 20.10	$ 1.05	$ 21.15
Carpenter	$ 25.41	$ 6.33	$ 31.74	Line Erector - Power/Cable Splicer	$ 40.00	$ 9.16	$ 49.16
Carpenter - Rough	$ 24.00	$ 3.30	$ 27.30	Loader Operator - Front-End	$ 25.25	$ 3.94	$ 29.19
Cement Mason/Finisher	$ 23.68	$ 0.00	$ 23.68	Mechanic- Maintenance	$ 20.65	$ 5.36	$ 26.01
Comm Transmission Erector-Microwave/Cell	$ 22.00	$ 4.10	$ 26.10	Mechanic- Refrigeration	$ 26.50	$ 6.58	$ 33.08
Communication Equip Installer	$ 17.00	$ 1.34	$ 18.34	Millwright	$ 27.00	$ 6.50	$ 33.50
Crane Operator =>15 Tons)	$ 27.68	$ 6.38	$ 34.06	Painter	$ 33.75	$ 31.25	$ 65.00
Diver	$ 32.00	$ 4.80	$ 36.80	Paver Operator	$ 23.91	$ 4.19	$ 28.10
Dry-Wall Applicator	$ 24.00	$ 0.00	$ 24.00	Pipe/Steam/Sprinkler Fitter	$ 31.50	$ 17.36	$ 48.86
Dry-Wall Taper & Finisher	$ 24.00	$ 0.68	$ 24.68	Pipelayer	$ 25.50	$ 6.14	$ 31.64
Earth Auger Operator	$ 27.33	$ 5.85	$ 33.18	Plumber (Licensed)	$ 28.00	$ 4.18	$ 32.18
Electrician - Licensed	$ 29.00	$ 6.72	$ 35.72	Plumber Helper/Trainee	$ 19.25	$ 2.10	$ 21.35
Electrician Helper/Cable Puller	$ 19.38	$ 5.24	$ 24.62	Reclaimer Operator	$ 47.40	$ 0.00	$ 47.40
Elevator Constructor/Installer	$ 61.42	$ 41.17	$ 102.59	Rigger	$ 26.00	$ 7.43	$ 33.43
Excavator Operator	$ 21.00	$ 1.56	$ 22.56	Roller Operator - Earth	$ 20.00	$ 2.89	$ 22.89
Fence Setter	$ 19.00	$ 2.00	$ 21.00	Roller Operator - Pavement	$ 22.84	$ 4.52	$ 27.36
Flagger	$ 15.00	$ 0.00	$ 15.00	Screed/Wheelman	$ 20.00	$ 3.18	$ 23.18
Floor Layer	$ 22.00	$ 4.32	$ 26.32	Sheet Metal Worker	$ 22.50	$ 5.42	$ 27.92
Grader/Scraper Operator	$ 25.00	$ 6.64	$ 31.64	Truck Driver - Heavy	$ 16.00	$ 0.85	$ 16.85
Hot Top Plant Operator	$ 23.91	$ 5.94	$ 29.85	Truck Driver - Light	$ 22.00	$ 0.52	$ 22.52
Industrial Truck (Forklift) Operator	$ 25.00	$ 1.95	$ 26.95	Truck Driver – Medium	$ 20.81	$ 1.68	$ 22.49
Insulation Installer	$ 21.00	$ 2.12	$ 23.12	Truck Driver - Tractor Trailer	$ 25.00	$ 3.05	$ 28.05

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

Apprentices – The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

Title 26 §1310 requires that a clearly legible statement of all fair minimum wage and benefits rates to be paid the several classes of laborers, workers and mechanics employed on the construction on the public work must be kept posted in a prominent and easily accessible place at the site by each contractor and subcontractor subject to sections 1304 to 1313.

Appeal – Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates.

A true copy

Attest: Scott R. Cotnoir
Scott R. Cotnoir
Wage & Hour Director
Bureau of Labor Standards

Expiration Date: 12-31-2021

SPECIAL PROVISION
SECTION 501
FOUNDATION PILES
(Drilled Shafts)

Specification Section 501 - Foundation Piles is amended by the addition of the following:

501.01 Description

This work shall consist of all labor, materials, equipment and services necessary to perform all operations to complete the drilled shaft installation. Drilled shafts shall consist of reinforced concrete with permanent steel casing seated in bedrock.

501.011 Definitions

Drilled Shaft. Deep foundation element constructed by excavating soil and bedrock and backfilling with cast-in-place concrete reinforced with a reinforcing steel cage.

Drilled Shaft Rock Socket. The top of the drilled shaft rock socket and minimum rock socket length are shown on the Plans. The top of the drilled shaft rock socket is coincident with the bottom of the permanent casing and is defined as elevation "TOR". The bottom of the drilled shaft rock socket is defined as elevation "BOR" and is based on the minimum required socket length. The "TOR" and "BOR" elevations may be modified by the Resident based on the results of confirmation coring. The diameter of the rock socket shall be as shown on the Plans.

Drilled Shaft Earth Excavation Earth excavation is excavation accomplished with conventional tools such as augers fitted with either soil or rock teeth, drilling buckets, and over reaming (aside) buckets attached to drilling equipment of the size, power, torque, and down thrust (crowd) approved for use by the Resident.

Obstructions. Obstructions are defined as man-made materials, stones, and other materials or debris, or as natural material such as boulders, that require the use of special procedures and/or tools by the Contractor when the hole advancement slows to less than 10 percent of the normal hole advancement rate while using conventional augers fitted with soil or rock teeth, drilling buckets, core barrels, and/or under-reaming tools. Surficial boulders, riprap, stumps, or other visible debris shall be removed prior to placing casing and are not considered obstructions. Drilling tools or parts thereof that are lost in the excavation shall not be considered obstructions and shall be promptly removed by the Contractor without compensation.

Top of Rock. The depth in a test boring below which continuous bedrock is penetrated using a rock core bit. Weathered rock shall not be considered Top of Rock. Where sloping rock conditions are encountered, the top of rock shall be considered as the point to which permanent casing must be advanced to achieve bedrock bearing around its full circumference.

The Top of Rock elevations at the available test borings within each substructure location are shown on the Plans and on the boring logs. These data consist of a limited number of widely spaced borings; therefore, actual conditions will vary. The Contractor is responsible for the means and methods of excavating the rock sockets for the drilled shafts.

Sloping Rock. Sloping rock is defined as a change in top of rock elevation exceeding 1.5 feet in any direction across the diameter of the permanent casing. A potential sloping rock condition will be initially determined within a pile cap based on interpolation of the top of rock elevations encountered in the design phase borings and construction confirmation borings. If the Contractor believes that sloping rock is present, they are required to probe using cased wash test boring procedures and roller cone advancement along the perimeter of the permanent casing of each shaft in at least two locations to determine if the minimum rock elevation difference exists. Roller cone advancement rate per minute shall be recorded to assess the top of rock elevation.

501.02 Materials

Provide materials for constructing drilled shafts as follows:

1. All reinforcing steel shall conform to the Standard Specifications and Plans except as modified and supplemented herein.
2. Concrete with a minimum 28-day compressive strength of 4,000 psi and a maximum aggregate size of 1/2-inch.
3. Steel for the permanent drilled shaft casings with a minimum thickness of 3/4-inch and conforming to ASTM A-252, Grade 3.
4. Schedule 40 black steel pipe shall be used for Crosshole Sonic Logging (CSL) Tubing.
5. Sand-cement grout to fill in CSL tubes and core holes in concrete. Sand-cement grout shall consist of Portland cement, ASTM C150, Type II; clean natural sand, ASTM C404; and water to result in grout with a minimum 28-day compressive strength of 5,000 psi.

501.03 Qualifications and Submittals

The Contractor performing the work described in this specification shall have installed drilled shafts of similar diameter, length, difficulty of installation, and subsurface conditions to those shown on the Plans for a minimum of five years prior to the bid date for this project.

No later than sixty (60) Days prior to the start of installation of the Drilled Shafts, the Contractor performing the work described in this Special Provision shall submit:

1. A list containing at least three projects completed in the last five years on which the Contractor installed drilled shafts of a similar diameter, length, and of similar difficulty and subsurface conditions, to those shown on the Plans. The Contractor's experience list shall include at least one project where drilled shafts were installed over a body of water from temporary working platform. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractors participation on those

projects.

2. A signed statement that the Contractor has inspected both the project site and all the subsurface information including any soil or rock logs made available in the contract documents.

The Resident shall approve or reject the Contractor's qualifications and staff within fourteen (14) Working Days after receipt of the submission.

The Contractor will not be allowed to begin work until all related submittal requirements are satisfied and found acceptable to the Resident. At least sixty (60) days prior to start of installation of drilled shafts, the Contractor shall prepare and submit a Drilled Shaft Installation Plan. All submittals will be reviewed by the Resident in accordance with Standard Specification Section 105.7, Working Drawings. This plan shall, at a minimum, provide information on the following:

1. Qualifications
    - Name and experience record of the Contractor's Drilled Shaft On-site Supervisor in charge of drilled shaft operations for this project. The on-site supervisor shall have at least five years' experience in drilled shaft construction.
    - Qualifications of the Contractor's Drilled Shaft Inspector. The inspector shall have a minimum five years' experience in drilled shaft inspection.
    - Qualifications of the driller engaged by the Contractor to perform the confirmatory core borings.
    - Qualifications of the driller engaged by the Contractor to perform the coring of drilled shafts.
    - Name and experience of the Contractor's independent special testing firm(s) to supply equipment and personnel to conduct CSL testing and drilled shaft inspection device testing of the drilled shafts.
2. Details of overall construction operation sequence and the sequence of shaft construction, including descriptions of construction staging and installation methods used to deal with variable river levels, strong currents and strong wind/wave action.
3. The drilled shaft Contractor's quality control plan, including methods to monitor the shaft installations to determine that they are installed in accordance with this Special Provision. Provide sample inspection forms, including at a minimum: drilled shaft soil and rock excavation log, obstruction log, drilled shaft inspection log, drilled shaft inspection device log, concrete placement log, and concrete placement form with concrete volume curve.
4. List of proposed equipment to be used including temporary work platforms or trestles, cranes, barges, falsework, drills, augers, baling buckets, final cleaning equipment, core sampling equipment, tremies or concrete pumps, casing, etc. Include a review of equipment suitability based on the Contractor's understanding of site and subsurface conditions.

5. If temporary casing is proposed, include dimensions and detailed procedures for installation and removal.
6. Details of shaft excavation methods in soils and rock, including methods for seating the casing in sloping bedrock, methods for excavating sloping bedrock, methods of maintaining shaft vertical and horizontal alignment, methods of advancing casing, methods of removing any potential obstructions, and methods for maintaining a positive head of fluid in the shaft during excavation and in shafts left open overnight or over an extended period of time.
7. Details of methods to advance permanent casing several feet into rock as may be necessary to develop a positive seal for rock socket drilling.
8. Methods of handling and disposition of drilling fluids, spoil materials, and contaminated/excess concrete. Discharge of such into any water body is prohibited.
9. Methods and procedures to clean the bottom of the drilled shaft excavations and determine the thickness of sediment in the bottom of drilled shafts. Also describe methods and procedures to determine length, diameter and alignment of the rock socket, and the cleanliness and soundness of the rock socket bearing surface.
10. Details of the drilled shaft inspection device to be used to inspect the bearing surface at each shaft. The drilled shaft inspection device shall be capable of measuring the sediment thickness on the bottom of the rock socket and viewing and recording the condition of the bottom of the prepared rock socket.
11. Details of reinforcement placement including support, centralization materials/methods and concrete reinforcement cage supports at bottom of socket.
12. The concrete mix design, including admixtures (if any) to be used, and details of concrete placement, curing and protection.
13. Details of concrete placement including proposed equipment and operational procedures for tremie methods (and pumping, if approved by the Resident).
14. Details for CSL testing.
15. All of the above submittal information shall be provided in a single comprehensive package to the Resident for review.

Prior to commencement of drilled shaft construction, the Contractor shall arrange for and conduct a drilled shaft pre-construction meeting. At a minimum, attendees shall include the Resident, the Geotechnical Engineer, the Contractor's Drilled Shaft On-site Supervisor and the Contractor's Drilled Shaft Inspector.

The Contractor shall submit confirmatory core boring logs for each pier a minimum of seven (7) days before commencement of drilled shafts at that pier in accordance with Subsection 501.04 Confirmatory Core Borings.

After commencement of drilled shaft construction, submit drilled shaft installation logs, drilled shaft testing data and reports and concrete coring logs within 48 hours of completion of the given activity in accordance with the following Subsections:

- 501.043 Installation Inspection – Drilled shaft installation logs
- 501.047 Non-Destructive Testing (paragraph Crosshole Sonic Logging) – Drilled shaft testing data and reports
- 501.047 Non-Destructive Testing (paragraph Core Drilling of Drilled Shaft Concrete) – Concrete coring logs

501.04 Construction Requirements

501.041 Confirmatory Core Borings

To confirm the depth and nature of the bedrock at some of the proposed shaft locations, the Contractor shall take confirmatory core borings (rock cores) prior to commencement of drilled shaft foundation installation at the following minimum locations:

Pier	Number of Confirmation Borings	Coordinates (Northing, Easting [feet]) and *Verbal Description*	Required Minimum Core Depth(s)
1	2	1285746, 2182993 1285769, 2183018 *Shaft locations at opposite corners of cap*	1 @ 20 feet 1 @ 5 feet
2	1	1285954, 2183236 *Shaft furthest from Design Phase boring*	5 feet
3	1	1286168, 2183468 *Shaft furthest from Design Phase boring*	5 feet
4	2	1286399, 2183683 1286398, 2183717 *Shaft locations at opposite corners of cap*	1 @ 20 feet 1 @ 5 feet
5	3	1286613, 2183914 1286596, 2183930 1286630, 2183932 *3 Shafts furthest from Design Phase boring*	5 feet each

Confirmatory core borings will be completed at additional locations as directed by the Resident or their Agent. The Contractor shall collect rock cores continuously. At all confirmatory borings, except for Pier 4 upstream, the Contractor shall cut rock cores to the minimum depths below the top of bedrock presented in the table above and continue until at least two (2) consecutive feet of rock having a Rock Quality Designation (RQD) value of 25 percent or greater is encountered. Calculation of minimum RQD shall consist of at least two pieces of rock core greater than 4 inches long in the final 2 feet of the core.

Borings shall be advanced to bedrock by driving or spinning casing and washing. Casing shall have a minimum outside diameter (O.D.) of 3.5-inches. Minimum NQ2-size rock cores shall be cut with a double or triple tube core barrel. Bedrock shall be drilled and cores recovered, stored, and transported in accordance with ASTM D2113 and D5079 "Routine Level" of care. Rock core shall be measured, visually identified and described on a boring log form accepted by the Resident.

The Contractor shall provide access to the Resident or their Agent to the drilling operation to allow for borehole observation and logging, and measurement of RQD from the rock core samples. The Contractor shall give a minimum 72-hour notice to the Resident prior to starting the drilling operation. The top of rock at a given drilled shaft location shall be based on the results of the confirmatory core borings and existing borings. The Resident will be the sole judge as to the classification of rock encountered during drilling of the confirmatory borings, including the quality of the rock, depth to top of rock, and elevation of top of rock.

The core samples shall be placed in suitable wooden boxes with hinged box covers, divided into separate compartments for individual core runs, identified by shaft location, elevation, and project number and delivered with the Contractor's field log to the Resident within 24 hours after the exploration is completed. If the encountered rock conditions are not consistent with design assumptions, the Resident may require the Contractor to collect additional core samples at depths greater than the bottom of the proposed rock sockets. The Resident or their Agent will review the field logs and cores and determine the final depth of required excavation based on the quality of rock encountered in the borings and advise the Contractor of any adjustments to the rock socket lengths shown on the Plans within three (3) days of receipt of the confirmation core logs.

501.042 Drilled Shaft Construction

Construction Control The Contractor shall control their operations to prevent damage to existing structures and utilities. Preventive measures shall include, but are not limited to, selecting construction methods and procedures that will prevent caving of the shaft excavation, monitoring and controlling vibrations from construction activities such as the driving of casing or sheeting, or drilling of the shaft or socket.

Excavation and Drilling Equipment The Contractor shall perform the excavations required for shafts, through whatever materials are encountered, to the dimensions and elevations shown in the Plans or otherwise required by the Specifications and Special Provisions. The Contractor's methods and equipment shall be suitable for the intended purpose and materials encountered. Blasting shall not be permitted.

Shaft excavations shall be made at locations and to the elevations, shaft geometry and dimensions shown on the Plans unless modified by the Resident. The Contractor shall extend the drilled shaft tip elevations when the Resident determines that the material encountered during excavation is unsuitable or differs from that anticipated in the design of the drilled shaft.

The excavation and drilling equipment shall have adequate capacity including power, torque and down thrust to excavate a hole of both the diameter and to a depth of 20 percent beyond what is the Plans.

Excavated solid and fluid materials which are removed from shaft excavations shall be reused on site as shown on the Plans or legally disposed of by the Contractor in accordance with all applicable local, state, and federal laws. No direct discharge of drill water, cuttings, or other spoils into any water body shall be allowed.

Construction activities, including drilling, within a radius of three shaft diameters of the center of a newly concreted drilled shaft shall not be permitted until the concrete has been in place for at least 72 hours and at the acceptance of the Resident.

Drilled Shaft Rock Socket Excavation The Resident may modify the elevation "TOR" and/or elevation "BOR" and the length of the rock socket based on results of the confirmatory core borings conducted as a part of this work. Such changes will also apply to the pay quantities for related items.

After removal of the overburden from within the casing, the casing shall be further advanced into bedrock, as shown on the Plans or directed by the Resident, or if necessary to achieve sealing against the entry of overburden. Then the excavation shall continue into rock below the casing as an uncased rock socket of the length and diameter indicated on the Plans. The inside surface of the casing shall be cleaned free of extraneous material prior to placing the concrete. The rock socket shall not be constructed until the casing is seated in the rock and until the casing has been checked for plumbness by the Contractor to the satisfaction of the Resident. The Contractor shall use a method of rock socket excavation that is capable of providing a cylindrical opening of the specific diameter and to the full depth shown on the Plans or to the depth directed by the Resident. Excavation shall not result in overbreakage of the rock surface, or compromise the seal at the bottom of the steel casing. The methods of excavating the rock socket shall be controlled to prevent undercutting of the steel casing.

Blasting will not be allowed under this contract to excavate the rock for shafts.

Sloping Rock If sloping rock is present as defined herein, the Contractor shall notify the Resident if the rock needs to be leveled before the permanent casing can be advanced.

Obstructions The Contractor shall remove surface and subsurface obstructions at drilled shaft locations. Man-made obstructions have not been identified at the site. The Contractor shall employ special procedures and/or tools if the hole advancement slows to less than 10 percent of the normal hole advancement rate using conventional augers fitted with soil or rock teeth, drilling buckets, core barrels and/or under reaming (aside) tools. The normal advancement rate shall be determined based on the Contractor's drill logs that record shaft excavation depths as a function of time. The Contractor shall make a good faith effort to penetrate through potential obstructions using conventional tooling/drilling methods. Special procedures/tools may include but are not limited

to: chisels, boulder breakers, air tools, hand excavation, temporary casing, and increasing the hole diameter. Blasting will not be permitted.

When suspected obstructions are encountered, the Contractor shall notify the Resident and recommend a course of action to advance the drill hole in an expedient manner. The Resident shall determine if an obstruction has been encountered.

Permanent Casing Permanent casing shall be used at the locations shown on the Plans. The casing shall be continuous between the top and bottom elevations (at a minimum) shown on the Plans. After installation is complete, the permanent casing shall be cut off at the elevation shown on the Plans and the shaft completed by installing necessary reinforcing steel and concrete in the casing. Open hole excavation for shafts will not be allowed.

Permanent steel casings shall be provided to aid shaft alignment and position, to prevent sloughing of the top of the shaft excavation and to prevent excessive deformation around the hole. The casing shall be advanced through the ground by spinning and/or vibrating before being cleaned out to a depth below TOR as they deem necessary to maintain a stable excavation and facilitate construction of the sockets. The casing shall be installed in a manner that will produce a positive seal at the bottom of the casing so that no piping of water or other materials occurs into or from the shaft excavation. The Contractor shall be responsible for providing equipment and tooling with the ability to seat the casing in sloping bedrock, if encountered, to provide a stable rock socket.

Casings may be seamless or have straight or spiral butt-welded seams. Lap welded seams are not acceptable. Casing material shall be permanent and shall conform to the dimensions and material requirements shown on the Plans. Casings shall be steel, smooth, clean, and of ample strength to withstand both handling and driving stresses and the pressure of both concrete and the surrounding earth materials. Permanent casing thickness and the inside diameter of casing shall not be less than that shown on the Plans. The Contractor shall determine the actual thickness and inside diameter of the casing needed to safely advance and seat the casing into rock without overstressing and damaging the casing. Temporary casing, if used, shall be removed from shaft excavations. Permanent casing shall not be retracted from the deepest installed tip elevation.

The procedures and methods to install the steel casings shall not damage the casing. After installation, each casing shall be inspected using methods proposed in the accepted Contractor's Drilled Shaft Installation Plan (refer to Subsection 501.03 above). Any casing that shows bends or kinks or other deformations that would impair the strength or efficiency of the completed shaft shall be replaced or repaired in a manner satisfactory to the Resident.

Temporary Casing All subsurface casing shall be considered temporary unless specifically shown as permanent casing on the Plans. The Contractor shall be required to remove temporary casing before completion of concreting the drilled shaft.

If the Contractor elects to remove a casing and substitute a longer or larger diameter casing through caving soils, the excavation shall be backfilled up to ground level before the existing casing is

removed and replaced. Other methods, as approved by the Resident, may be used to control the stability of the excavation and protect the integrity of the foundation soils.

Temporary casings which become bound or fouled during shaft construction and cannot be practically removed shall constitute a defect in the drilled shaft. The Contractor shall be responsible to improve such defective shafts to the satisfaction of the Resident. Such improvements may consist of, but are not limited to, removing the shaft concrete and extending the shaft deeper to compensate for loss of frictional capacity in the cased zone, providing straddle shafts to compensate for capacity loss, or providing a replacement shaft. All corrective measures including redesign of drilled shaft transition to the column caused by defective shafts shall be done to the satisfaction of the Resident, by the Contractor, without either compensation or an extension of the completion date of the project.

Drilling Fluid Drilling fluid shall consist of river water. Drilling slurry shall not be used for this project.

Each drilled shaft excavation shall be filled and maintained with drilling fluid at all times. Drilling fluid shall be added to the excavation as necessary to maintain a positive head above the existing water elevation in the surrounding water body.

501.043 Installation Inspection

The drilled shaft installation shall be inspected by the Contractor. The Department or their agent will also inspect the drilled shaft installation and record installation data/information. The Contractor shall keep a daily construction record.

For each drilled shaft foundation installed, record on the drilled shaft installation logs:

- shaft number and location
- names of driller, superintendent, and engineer
- make and model of drill rig and ancillary equipment
- dates and times of the start and completion of all activities, including interruptions to the work
- weather conditions
- shaft excavation dimensions
- elevations of top and bottom of temporary and permanent casings
- depth/elevation of Top of Rock
- description of materials encountered at particular depths/elevations and drill tools used to excavate the shaft at all elevations
- horizontal and vertical alignment, including the results of verticality testing during shaft excavation
- condition of bottom of excavation upon completion of excavation, prior to placement of steel reinforcement, and prior to placement of concrete
- verticality and deviation from plan location
- the theoretical volume of excavation, volume of concrete placed vs. depth, and total volume

of concrete placed. Report observed irregularities to the Department or their agent within 24 hours of discovery. Provide a chart of concrete volume placed versus theoretical and actual rise of concrete in the shaft during placement.

- other pertinent data relevant to installation of the drilled shaft

Refer to FHWA-NHI-18-024, GEC 010 "Drilled Shafts: Construction Procedures and Design Methods" for minimum record keeping information.

Submit draft record information for each completed shaft weekly. Submit final record of each drilled shaft installed no more than three weeks after completion of the Work.

The Contractor shall provide access to the Department or their agent at all times during shaft installation to allow the Department or their agent to make observations and/or measurements. Casing installation, shaft excavation, rock socket inspection, reinforcing installation, concrete placement and non-destructive shaft testing shall only be performed when the Department or their agent is present at the shaft location. The Contractor shall also provide equipment for checking the dimensions and alignment of each shaft excavation and for evaluation of the rock socket. Final shaft depths will be measured by the Department or their agent after final cleaning. A minimum of 50 percent of the base of each shaft shall have less than 1 inch of sediment at the time of placement of the concrete. The maximum thickness of sediment or debris at any place at the base of the socket shall not exceed 1.5 inches. The Department or their agent will determine if shaft cleanliness requirements are met using methods deemed appropriate to the Department or their agent for wet shafts including but not limited to probing and underwater inspections (see below).

The Contractor shall provide equipment for checking the length of each rock socket and alignment of each installed permanent casing using means approved by the Resident. Electronic measuring equipment may be used, but is not required. The Department or their agent will measure the final bottom of socket depth after cleaning. Prior to the placement of underwater concrete and prior to making final measurements of bottom of rock socket (by Department or their agent), the Contractor shall use an approved drilled shaft inspection device as outlined in Contractor Submittal to provide a comprehensive underwater inspection of the prepared rock socket bearing surface at each shaft. The Contractor shall record drilled shaft inspection device observations on reliable digital media. The date, shaft number, and camera position shall be recorded. Copies of all data (written, electronic, DVDs, digital files, etc.) obtained during inspections shall be submitted to the Resident for review and become property of the Department.

The Contractor shall provide and maintain facilities for the Department or their agent to inspect each drilled shaft as needed during advancement of the excavation, to evaluate conditions at the bottom of shaft excavation immediately prior to placing reinforcing steel, and if requested by the Department or their agent, prior to placement of drilled shaft concrete. Concrete placement shall not begin until all inspection reports related to drilled shaft excavation, tolerances, drilled shaft excavation soundness and cleanliness, including drilled shaft inspection device records, are submitted to the Resident and the Resident's acceptance has been obtained.

501.044 Construction Tolerances

The following construction tolerances apply to drilled shafts unless otherwise stated in the contract documents:

1. The drilled shaft shall be within 2 inches of plan position in the horizontal plane at the plan elevation for the top of the shaft.
2. The vertical alignment of a vertical shaft excavation shall not vary from the plan alignment by more than ¼ inch per foot of depth.
3. After all the concrete is placed, the top of the reinforcing steel cage shall be no more than 6 inches above and no more than 3 inches below plan position.
4. Reinforcing steel bars shall be placed to meet the minimum cover shown on the Plans.
5. All casing diameters shown on the Plans refer to I.D. (inside diameter) dimensions. The dimensions of casings are subject to American Pipe Institute tolerances applicable to regular steel pipe. When approved by the Resident, the Contractor may provide a casing larger in diameter than shown on the Plans.
6. The rock socket length of the shaft shall have a tolerance of minus 3 inches from the plan dimension of the shaft.
7. Excavation equipment and methods shall result in a completed shaft excavation with a planar bottom. The cutting edges of excavation equipment shall be normal to the vertical axis of the equipment within a tolerance of +/- 3/8 inch per foot of diameter.

Drilled shaft excavations and completed shafts not constructed within the required tolerances are unacceptable. The Contractor shall be responsible for correcting all unacceptable shaft excavations and completed shafts to the satisfaction of the Resident.

501.045 Reinforcing Steel Cage Materials, Construction and Placement

Reinforcing steel for drilled shafts shall be as noted on the Plans and conform to the Specifications and Plans.

The reinforcing steel cage, consisting of longitudinal bars, couplers, spirals, ties, cage stiffener bars, spacers, centralizers, CSL tubes, and other necessary appurtenances, shall be completely assembled and placed as a unit immediately after the shaft excavation is inspected and accepted, and prior to concrete placement. The reinforcing steel cage and concrete shall be placed within 48 hours of the last sounding/inspection by the Department or their agent.

Hooks at the top of the rebar cage should not be bent outward if there is any chance that temporary casing will be used. Interior hooks must be designed to permit adequate clearance for a concrete tremie pipe.

Tie and support reinforcing steel in the shaft so that the reinforcing steel will remain within the allowable tolerances given above. Use concrete spacers or other approved non-corrosive spacing devices at sufficient intervals (near the bottom and at intervals not exceeding 10 feet up the shaft)

to ensure concentric spacing for the entire cage length. Spacers shall be equal in quality and durability to the concrete specified for the shaft. The spacers shall be of adequate dimension to insure a minimum 3 inch concrete cover between the reinforcing cage and the sidewalls of the rock socket. Provide cylindrical concrete feet (bottom supports), or other means to ensure that the bottom of the cage is maintained the proper distance above the bottom of the rock socket and shall be as accepted by the Resident in the Drilled Shaft Installation Plan (refer to Subsection 501.03 above).

Check the elevation of the top of the steel cage before and after the concrete is placed. If the rebar cage is not maintained within the specified tolerances, corrections shall be made by the Contractor to the satisfaction of the Resident. No additional shafts shall be constructed until the Contractor has modified the rebar cage support in a manner satisfactory to the Resident.

If the bottom of the constructed shaft is lower than the bottom of the shaft shown on the Plans or as determined by the confirmatory core borings, the Contractor shall submit a detail sketch drawing that clearly shows a proposed method for maintaining the reinforcing cage in the design location.

Dropping or forcing reinforcing steel into the shaft shall not be permitted. If the reinforcing steel does not properly or smoothly enter the excavation, the Contractor shall pull the cage and adjust and properly clean the excavation until the reinforcing fits smoothly.

501.046 Concrete: Material and Placement

The Contractor has the option to propose self-consolidating concrete (SCC) for drilled shafts. If the Contractor chooses to use SCC for drilled shafts, the SCC shall conform to the requirements stated herein. SCC shall meet the requirements for strength, entrained air and permeability for Class A concrete. SCC shall be tested for slump flow in accordance with ASTM C1611; the visual stability index (VSI) shall be 0 or 1. The SCC mix design shall be submitted and approved by the Resident.

SCC or other proposed drilled shaft concrete mix design shall meet the requirements outlined in Section 502 of the MaineDOT Standard Specifications for Class A concrete.

Portland cement concrete shall meet the requirements shown in the Plans and specified in the Special Provisions and Section 502 of the MaineDOT Standard Specifications with a maximum aggregate size of 1/2 inch. The use of a water-reducing admixture is permissible to provide a workable mix that will surround the reinforcement bars without the use of vibrators. Actual slump shall be within the range stated in the Contractor's proposed mix design, with water-reducing admixture for non-SCC mixes. Concrete placement shall be performed in accordance with Section 502 of the Standard Specifications on concrete materials and with the requirements herein.

Concrete shall not be placed in the shaft until the shaft excavation has been accepted by the Resident. Concrete shall be placed within 48 hours after reinforcing steel placement. Concrete placement shall be conducted in one continuous operation from the bottom to the top of the shaft.

Concrete placement shall continue after the shaft excavation is full until good quality concrete is flowing out of the casing at the top of shaft or concrete shall be poured high inside the casing and unsatisfactory concrete shall be chipped out prior to concrete cap placement. Concrete shall be placed by tremie methods only.

All admixtures, when approved for use, shall be adjusted for the conditions encountered on the job so the concrete remains in a workable plastic state throughout the placement operation. Prior to concrete placement, the Contractor shall provide test results of a trial mix conducted by an approved testing laboratory using approved methods to demonstrate that the concrete meets this requirement. The trial mix tests shall be conducted using concrete and ambient temperatures appropriate for site conditions.

CSL tubes shall be filled with water and capped prior to concrete placement.

Contractor shall contain and dispose of all waste or overflow concrete to prevent entrance into any water body. The Resident will approve the method of containment.

Tremies Tremie pipes shall be used for concrete placement of the drilled shafts. Concrete shall not be placed using any other methods.

Tremies used to place concrete shall consist of a tube of sufficient length, weight, and diameter to discharge concrete at the bottom of the drilled shaft excavation. The tremie shall not contain aluminum parts which will have contact with the concrete. The tremie inside diameter shall not be less than 10 inches. The inside and outside surfaces of the tremie shall be clean and smooth to permit both flow of concrete and unimpeded withdrawal during concreting. The wall thickness of the tremie shall be adequate to prevent crimping or shear bends which restrict concrete placement.

The tremie used for concrete placement shall be watertight. Underwater placement shall not begin until the tremie is placed to the shaft base elevation. Valves, bottom plates or plugs may be used only if concrete discharge can begin within one tremie diameter of the base. Plugs shall either be removed from the excavation or be of material, approved by the Resident, which will not cause a defect if the plug is not removed. The discharge end of the tremie shall be constructed to permit the free radial flow of concrete during placement operations. The tremie discharge end shall be immersed at least 5 feet in concrete at all times after starting the flow of concrete. The flow of the concrete shall be continuous. The concrete in the tremie shall be maintained at a positive pressure differential at all times to prevent water intrusion into the shaft concrete. The concrete mix shall be of such design that the concrete remains in a workable plastic state throughout the placement of the concrete for the entire drilled shaft.

If at any time during concrete placement, the tremie line orifice is removed from the fluid concrete column and discharges concrete above the rising concrete level, the shaft shall be considered defective. In such cases, the Contractor shall remove the reinforcing cage and concrete, complete any necessary side wall removal directed by the Resident and repour the shaft. If removal of the reinforcing cage and concrete is not feasible, the Contractor shall submit methods of repair for

acceptance by the Resident.

501.047 Non-Destructive Testing

All of the completed drilled shafts shall be subject to non-destructive testing to evaluate their structural integrity. Such tests include (a) thermal integrity profiling of all drilled shafts and (b) CSL tests on shafts as directed by the Resident or their agent.

Thermal Integrity Profiling The Contractor shall coordinate for thermal integrity profiling (TIP), provide access for Agents of the Department to install thermal wires on reinforcing cages while they are laying on the ground, provide protection of thermal wires during installation of reinforcing cages, and provide access for Agents of the Department to connect data loggers to the exposed ends of the wires within 2 hours after completion of concrete placement. Data loggers shall be connected to the wires for up to 72 hours, after which the Contractor shall provide access for Agents of the Department to remove the data loggers.

The Contractor shall provide the proposed reinforcing installation and concrete placement schedule to the Resident with sufficient notice to provide a minimum 48 hour window in which to install thermal wires on the cage while it is on the ground, and a minimum of 48 hours notice prior to concrete placement. The Contractor shall assume the Department's testing Agent requires 8 hours of uninterrupted access to the cage for each shaft for connection of the thermal wires. In the event that the Contractor does not provide access to the cage and/or place concrete according to the schedule they provide to the Resident, and the Department's testing Agent is required to make additional or longer site visits as a result, the additional cost of the Department's testing Agent shall be paid by the Contractor.

The Contractor shall take measures to not damage TIP thermal wires and testing equipment. Any thermal wires or equipment damaged due to Contractor operations, as determined by the Resident, shall be replaced at no additional cost to the Department.

Crosshole Sonic Logging The Contractor shall perform CSL testing on production drilled shafts, when directed by the Resident. CSL testing will be conducted in the event of an indication of discontinuities, anomalies or defects in a shaft from the TIP results, or in the event of thermal wire damage or malfunction. However, CSL access tubes shall be installed in each drilled shaft as shown on the Plans and specified below.

CSL testing shall be completed within 10 calendar days after notification from the Resident that CSL testing is required for a shaft.

The Contractor shall employ a licensed professional engineer who is qualified to perform, evaluate and report the results of CSL. The report on the CSL tests on any given shaft shall include CSL logs with analyses of initial pulse arrival time or compression wave velocity versus depth, and pulse energy/amplitude versus depth. A CSL log shall be prepared for each tube pair tested, with any anomaly/defect zones indicated in the logs and discussed in the report. The Contractor shall

submit the CSL test results and the report for each shaft to the Resident within three working days of the performance of the test. Within three working days of receipt of the report, the Resident will evaluate the CSL results report and provide to the Contractor a response regarding the acceptability of the shaft that was tested.

If the Resident determines that the results of TIP and CSL testing are unacceptable, the Contractor shall be required to repair the unacceptable shaft to the satisfaction of the Resident and (a) prove to the satisfaction of the Resident the acceptability of all shafts constructed since the unacceptable shaft was constructed and the acceptability of the procedure to be used in constructing future shafts, or (b) cease all drilled shaft construction until a new construction procedure acceptable to the Resident has been proposed by the Contractor and acceptable by the Resident. In the latter case, those drilled shafts constructed after the unacceptable shaft will be repaired to the satisfaction of the Resident. If any repair procedures or revisions to the Contractor's installation procedure are proposed by the Contractor, the Contractor shall submit a written plan to the Resident to repair defects and revise construction procedures. If these plans involve changes to the structural design of the shafts or transition to the column, or to the geometry of the shafts, any redesign proposed in the Contractor's plan to the Resident shall be performed by a licensed professional engineer hired by the Contractor.

Access tubes for CSL testing shall be placed on each reinforcing cage in the position and at the frequency shown on the Plans. The access tubes for CSL testing shall consist of Schedule 40 black steel pipe conforming to ASTM A 53, Grade A or B, Type E, F or S. The inside diameter of the tubes shall be at least 1.5 inches.

All access tubes shall have a round, regular inside surface free of defects and obstructions, including all pipe joints, in order to permit the free, unobstructed passage of probes to the bottoms of the tubes. The access tubes shall be watertight, free from corrosion and free of deleterious material on the outside that can prevent bonding with the concrete. All access tubes shall be fitted with watertight caps on the bottom and top.

The number of tubes installed in each shaft are summarized below:

Socket Diameter	Number of Tubes Per Shaft	Configuration of Tubes around the inside of the Circular Reinforcing Cage
66 inches	6 minimum	60 degrees

Install the tubes in accordance with the pattern shown in the Plans.

Tie or otherwise secure the tubes to the interior of the reinforcing cage at intervals of no greater than 3 feet such that the tubes stay in position during insertion of the reinforcing steel cage and concrete placement. The tubes should be as near to vertical and parallel as possible and extend from 3 inches above the shaft bottom to at least 3 feet above the shaft top, or ground or water surface, whichever is higher.

Under no circumstance should the tubes be allowed to rest on the bottom of the drilled shaft excavation.

Make any joints required to achieve full length tubes watertight. Take care not to damage the tubes and to maintain tube alignment during reinforcement installation operations in the drilled shaft hole.

After placement of the reinforcement cage, fill the tubes with potable water as soon as possible (before concrete placement), and cap or seal the tube tops to keep debris out of the tubes. Before the placement of concrete, measure a minimum of one tube per drilled shaft, and record the length of the tube, including a notation of the stickup of the tubes above the shaft top. Provide this information, along with information on the shaft bottom and top elevations and/or length, and the construction date, to the Resident before the CSL tests.

The CSL equipment shall consist of a microprocessor-based CSL system for display of individual CSL records, analog-digital conversion and recording of CSL data, analysis of receiver responses, and printing of CSL logs; ultrasonic source and receiver probes for 1.5 inch I.D. pipe; an ultrasonic voltage pulsar to excite the source with a synchronized triggering system to start the recording system; a depth measurement device to determine and record depths; and appropriate filter/amplification and cable systems for CSL testing.

The Contractor shall conduct CSL testing at selected drilled shafts requested by the Resident. Testing shall be conducted between adjacent tubes on the shaft perimeter and between diagonal tube pairs, unless otherwise modified by the Resident. Additional logs may be conducted in the event any anomalies are detected in the specified logs. The full length of all tubes will be used for conducting CSL tests. Should an access tube be blocked, the Resident will determine what action should be taken by the Contractor in response. The Contractor shall exercise care in the removal of caps or plugs from the tubes after installation so as not to apply excess torque, hammering, or other stresses which could break the bond between the tubes and the concrete.

CSL tests will be carried out with the source and receiver probes in the same horizontal plane unless test results indicate potential anomalies/defects in which case the questionable zone may be further evaluated with angled tests (source and receiver vertically offset in the tubes). CSL measurements will be made at depth intervals of 2 inches or less, performed from the bottom to the top of each shaft. The probes will be pulled simultaneously, starting from the bottoms of the tubes, over the depth-measuring device. Slack from the cables will be removed prior to pulling to provide accurate depth measurements in the CSL records.

Any anomalies or defects indicated by longer pulse arrival times and significantly lower amplitude/ energy signals may require that further testing be carried out to evaluate the extent of such anomalies or defects. Supplemental non-destructive test methods which could be used if anomalies are identified include but are not limited to Angled Crosshole Sonic Logging, Crosshole Tomography, Single Hole Sonic Logging, and/or Sonic Echo and Impulse Response tests.

The acceptance of each drilled shaft will be determined by the Resident, based primarily on the results of the TIP testing and concrete placement records, including volume curves and field and laboratory concrete test results. Where conducted, CSL will be evaluated based on the acceptance criteria guidance developed by the Federal Highway Administration (FHWA) called the Concrete Condition Rating Criteria (CCRC). Rejection of a shaft will require conclusive evidence that a defect exists in the shaft which will result in inadequate or unsafe performance under service loads. If the non-destructive test records are complex or inconclusive, the Resident may require coring or excavation of the shaft to verify shaft conditions.

In the event testing discloses voids or discontinuities in the concrete that indicate the drilled shaft is not structurally adequate as determined by the Resident, the shaft will be cored to assess the presence of a void or unsuitable concrete as described in paragraph "Core Drilling of Drilled Shaft Concrete" below. The Contractor will submit a plan for remedial action to the Resident for acceptance. Any modifications to the foundation shafts and load transfer mechanisms caused by the remedial action will require calculations and working drawings stamped by a professional engineer licensed in the State of Maine hired by the Contractor for all foundation elements affected. Construction of additional drilled shafts will be suspended until the Contractor repairs, replaces or supplements the defective work, and the Resident approves the remedial work.

Prior to the beginning of downhole logging, the Contractor shall assure that the test probes can pass through every tube to the bottom. If a tube is obstructed, the Contractor shall core a hole within the drilled shaft near the obstructed tube to the depth of the obstructed tube that is large enough to accommodate the probe for the full length of the hole. The coring equipment, coring procedure and location of the core hole shall be approved by the Resident prior to beginning the coring process. The coring method shall provide for complete core recovery and shall minimize abrasion and erosion of the core. The core hole shall be placed at a position in the shaft that will not produce damage to the reinforcing steel in the shaft. The core hole shall be logged, voids or defects indicted on the log and the log submitted to the Resident. Core shall be preserved and made available for inspection by the Resident. The core hole will be treated as an access tube and downhole testing shall then commence.

Upon completion of the CSL testing and acceptance of the CSL results by the Resident, remove all water from the tubes and any other drilled holes and then completely fill the tubes and core holes with grout having strength properties equivalent to or better than those of the drilled shaft concrete.

Core Drilling of Drilled Shaft Concrete When directed by the Resident, the Contractor shall core production drilled shafts that are determined by the Resident to be unacceptable based on the results of non-destructive tests. The Contractor shall collect core samples from each defective shaft for the full depth of the irregularity and for a minimum 5 feet above and below the irregularity.

Obtain cores with a minimum diameter of 3.75 inches. Set the core drill machine so that the drill force will be exactly vertical and so there will not be more than 5 feet of laterally unsupported drill rod between the bottom of the drill spindle (chuck) and the top of the shaft concrete when the

hydraulic feed is in the up position. If longer laterally unsupported sections of drill stem are necessary, use braced casing or rigidly braced guides to prevent lateral whip. Drill, log, and store the cores in accordance with the requirements provided in Section 501.041, Confirmatory Core Borings. The Contractor shall perform the coring work in the presence of the Resident or their agent.

Provide the Resident with the cores along with two copies of the coring log for inspection and testing. Do not proceed with construction above the drilled shaft until the quality of the concrete in the shaft, as represented by the core samples and as indicated by laboratory testing, is determined to be acceptable and notification to continue construction is given by the Resident.

If the quality of the concrete in the drilled shaft is determined to be acceptable, the Contractor shall fill the core hole with grout having strength properties equivalent to or better than those of the drilled shaft concrete.

Cored Test Cylinders from Shaft Concrete When directed by the Resident, the Contractor shall utilize a hand coring machine or similar equipment to collect concrete cylinders from the top of production drilled shafts that are determined by the Resident to be unacceptable based on visual indication of contamination with soil or rock debris. The Contractor shall collect a 4-inch diameter, 12-inch long concrete cylinder that is suitable for unconfined compressive strength testing. The Contractor shall submit the portion of the cylinder selected by the Resident to a testing laboratory for testing in accordance with ASTM C39-20, "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens."

Provide the Resident with the laboratory test results. Do not proceed with construction above the drilled shaft until the results are determined to be acceptable and notification to continue construction is given by the Resident.

If the compressive strength meets the project requirements, the concrete shall be considered to be acceptable, and the Contractor shall fill the core hole with grout having strength properties equivalent to or better than those of the drilled shaft concrete.

501.05 Method of Measurement

Drilled Shaft Equipment Mobilization: Drilled Shaft Equipment Mobilization shall be measured as a lump sum.

Drilled Shafts: The quantities to be measured shall be the length in feet of the completed concrete drilled shaft of the diameter and containing the reinforcement shown on the Plans. The length shall be determined as the difference between elevation "D" and elevation "TOR". Elevation "TOR" shall either be as shown on the plans or as redefined by the Resident based on the results of confirmation cores.

Drilled Shaft, Rock Socket: Drilled shaft, rock socket will be measured by the length in feet of

complete bedrock excavation of the diameter shown on the Plans measured in linear feet along the centerline of the rock socket in place. The length shall be determined as the difference between elevation "TOR" and elevation "BOR" as shown on the Plans or as redefined by the Resident based on the results of confirmation cores.

Drilled Shaft, Sloping Rock: Measurement for rock leveling for sloping rock commences once the Resident is notified by the Contractor in writing (e.g., via email) that sloping rock exists and once the Contractor has advanced drill tooling to the highest encountered top of rock elevation identified via probing, and only after direction to proceed under the appropriate pay item is provided by the Resident. Measurement shall cease after the drill tooling reaches the lowest encountered top of rock elevation identified via roller cone probing, at which point the top of rock will be considered leveled. Measurement will be to the nearest quarter-hour. The Contractor shall have available on site at all times appropriate equipment, tools, materials and labor for the effective leveling of sloping rock. No separate measurement will be made for the time spent advancing the shaft above or below the highest and lowest encountered rock elevations or for any work prior to the Contractor receiving direction to proceed from the Resident.

Drilled Shaft Confirmatory Borings: Confirmatory core borings, including collection of rock core samples, will be measured by linear foot for rock coring as measured from the top of the first rock core run to the bottom of the last rock core run.

Removal of Obstructions: Measurement for obstruction removal commences once the Resident is notified by the Contractor in writing (e.g., via email) that the drilling progress has unavoidably been reduced to less than 10 percent of the normal advancement rate due to a potential obstruction, despite the continuing diligent efforts of the Contractor to progress the Work, and only after direction to proceed under the appropriate pay item is provided by the Resident. The Contractor shall take reasonable and diligent steps to remove such potential obstructions using conventional tools and drilling methods prior to notifying the Resident. As part of the Contractor's notification of an obstruction, they shall provide documentation to the Resident supporting the normal advancement rate (for the subject shaft or nearby shafts) and the reduced rate corresponding to the encountered obstruction, which will serve as the basis for the Resident to evaluate and approve obstruction removal time.

Measurement shall cease after the obstruction is removed from the excavation or broken through to a point where the drilled shaft foundation drilling can continue using conventional tooling/methods, as determined by the Resident. Measurement will be to the nearest quarter-hour. The Contractor shall have available on site at all times appropriate equipment, tools, materials and labor for the effective removal of all types of potential obstructions. No separate measurement will be made for the time spent dealing with any potential obstruction or obstruction prior to the Contractor notifying the Resident.

Concrete Coring - Shafts Without Defects: Coring of drilled shafts for the purpose of confirming the presence of defects indicated by non-destructive testing, where the drilled shafts are subsequently determined by the Resident to not contain defects, will be measured per linear foot

of concrete core. Coring of shafts that are determined by the Resident to contain defects will not be measured.

Concrete Test Cylinders - Shafts Without Defects: Coring and laboratory testing of 4-inch diameter, 12-inch long concrete cylinders from the top of drilled shafts for the purpose of confirming the presence of defects indicated by the presence of debris either during or following concrete placement, where the drilled shafts are subsequently determined by the Resident to not contain defects, will be measured per each cylinder, which includes a laboratory test. Coring and laboratory testing of cylinders of shafts that are determined by the Resident to contain defects will not be measured.

Thermal Integrity Profiler Test – Providing Access For. Providing access for Department personnel to install thermal wires and providing access and time for TIP testing will be measured per each test/ shaft.

Crosshole Sonic Access Tubes: CSL tube materials and personnel and equipment required for installation, and filling the tubes with grout upon completion of testing, will not be measured, but will be incidental to the Drilled Shaft pay item.

Crosshole Sonic Testing: CSL testing, including material, equipment and personnel required for testing, evaluation and reporting, will be measured per each test requested by the Department in which defects are not found. If CSL testing is requested by the Department based on review of TIP results and defects are found, the CSL testing will not be paid for by the Department.

Drilled Shaft Inspection Device Test: Drilled shaft inspection device testing will be measured per each test.

501.06 Basis of Payment

Drilled Shaft Equipment Mobilization: Drilled shaft equipment mobilization and demobilization will be paid for at the contract lump sum price. Such payment shall be full compensation for furnishing all labor, materials, and equipment necessary for transporting, providing access to all proposed shaft locations to perform the complete shaft installation, erecting, dismantling and removing all of the necessary drilled shaft installation and construction equipment.

Drilled Shafts: Drilled shafts shall be paid for at the contract unit price per linear foot for accepted lengths of drilled shaft of the diameter specified. Such payment shall include the cost of excavation of overburden soils, weathered rock, fractured rock and rock from mudline to elevation “TOR”, reinforcing steel in the shaft and rock socket, concrete in the shaft and rock socket, concrete placement, all labor, materials, equipment, temporary casings, permanent casings, CSL tube materials and installation, non-destructive testing, inspection, and other incidentals necessary to complete the drilled shaft, including rock socket. Such payment shall include full compensation for development of a Drilled Shaft Installation Plan and amendments (if required) acceptable to the Resident, drilled shaft personnel, and all drilled shaft excavation and inspection record keeping

and reports. Such payment shall include full compensation for use of special tools and drilling equipment to excavate the shaft to the depth indicated on the Plans.

Management and disposal of excavated material from the drilled shaft will be paid for under Special Provision Section 203, Excavation and Embankment, Dredge Materials.

The Contractor shall perform the necessary excavation for the drilled shaft under the drilled shaft pay items. With the exception of materials that are accepted by the Resident as obstructions, no separate payment will be made for either excavation of materials of different densities or employment of special tools and procedures necessary to accomplish the excavation in an acceptable fashion.

All costs due to lost tool removal shall be borne by the Contractor including but not limited to, costs associated with hole degradation due to removal operations or the time the hole remains open.

No extra compensation will be allowed for concrete required to fill an oversized casing or oversized excavation or for loss of concrete through an unsealed casing or any concrete plug that may need to be utilized to seal the casing or rock socket. Repairing or replacing damaged casing will be at the sole expense of the Contractor. In addition, no compensation will be paid to the Contractor for furnishing, installing, removing or leaving temporary casings in place.

Materials and work necessary, including engineering analysis and redesign to complete corrections for out of tolerance drilled shaft excavations shall be furnished without either cost to the Department or an extension of the completion dates of the project.

Corrections made if the rebar cage is not maintained within the specified tolerances shall be at no additional cost to the Department. The Contractor shall repair or replace any damaged reinforcing as needed at no additional cost to the Department.

All costs to replace or provide remedial actions for defective or unacceptable shafts shall be fully borne by the Contractor.

Drilled Shaft, Rock Socket: Rock socket excavation shall be paid at the contract unit price per linear foot of rock socket of the diameter specified. Such payment shall be full compensation for all labor, materials, and equipment, tools, and drilling equipment to excavate the shafts to the required depths, and furnishing all other labor, materials and equipment necessary to complete the work. Payment for excavating the rock, and handling and managing of the resulting rock chips shall be included in the Drilled Shaft, Rock Socket payment item. Any costs associated with handling, management, dewatering and reuse on site, or disposal, of the resulting rock chips will be considered incidental to related Contract Pay Items.

Rock socket excavation is excavation in rock and requires rock specific tools or procedures to advance the excavation and is covered under the Drilled Shaft, Rock Socket pay item. All

excavation, performed more than 6 inches below the bottom of the reinforcement cage in the rock socket as determined by the Resident based on the results of the confirmatory core borings shall be considered incidental regardless of the density or character of materials encountered.

Cost for evaluation of bottom and sides of drilled shaft by probing and other methods shall be included as part of excavating the rock socket.

Use of rock specific tools or procedures to advance the drilled shaft excavation through glacial till, weathered bedrock or fractured bedrock will not be considered rock socket drilling.

Drilled Shaft, Sloping Rock: Flattening a sloping rock surface prior to installation of temporary casing will be paid for at the Contract unit price per hour under Drilled Shaft, Sloping Rock, paid to the nearest quarter-hour. Payment for removal of flattening of a sloping rock surface will be for a crew that is comprised of labor, equipment, and materials most effective and efficient for the flattening process.

No payment will be made for any lost time due to the Contractor's failure to have such equipment, tools, materials and labor available at the site.

Drilled Shaft Confirmatory Borings: Confirmatory core borings authorized by the Resident will be paid for at the contract unit price per linear foot of rock core, including additional core depth as directed by the Resident. Such payment shall include full compensation for casing advancement, soil drilling, rock coring, extracting, packaging and classifying the cores, delivering samples to the Department, and all other expenses necessary to complete the work. Payment shall also include equipment necessary to access the core locations shown on the Plans.

Removal of Obstructions: Removal of obstructions encountered during drilled shaft foundation drilling will be paid for at the Contract unit price per hour under Obstruction Removal, paid to the nearest quarter-hour. Payment for removal of obstructions will be for an obstruction removal crew that is comprised of labor, equipment, and materials most effective and efficient for the removal of obstructions during drilled shaft foundation drilling and for any and all other costs related to the removal or penetration of the obstructions.

No payment will be made for any lost time due to the Contractor's failure to have such equipment, tools, materials and labor available at the site. No separate payment will be made for the time spent dealing with any potential obstruction or obstruction prior to the Contractor notifying to the Resident.

Thermal Integrity Profiler Test – Providing Access For. Providing access for Department personnel to install thermal wires and providing access and time for TIP testing will be paid for at the unit price for each test.

Crosshole Sonic Access Tubes: Separate payment will not be made for CSL tube materials, preparation, installation and filling the tubes with concrete upon completion of testing, but will be

incidental to the Drilled Shaft pay item.

As described in Section 501.101, if a CSL tube is obstructed, the Contractor will core a hole within the drilled shaft near the obstructed tube, at no additional cost.

Crosshole Sonic Testing: CSL testing will be paid for at the unit price for each test that indicates no defects in the concrete, including material, equipment and personnel required for testing, evaluation and reporting. CSL testing will not be paid for if the results indicate concrete defects.

Drilled Shaft Inspection Device Test: Drilled shaft inspection device testing will be paid for at the unit price for each test.

Coring of Shafts Without Defects: Coring of drilled shafts for the purpose of confirming the presence of defects (if suspected based on the results of non-destructive TIP and CSL testing), where the drilled shafts are subsequently determined by the Resident to not contain defects, will be paid for at the contract unit price per linear foot of concrete core. This shall constitute full compensation for all costs incurred for the coring in shafts without defects, including set-up, access, materials, labor, observation, reporting, delivery of samples to the Resident, core bit wear, core disposal, and grouting of core holes.

Concrete Test Cylinders of Shafts Without Defects: Coring 4-inch diameter, 12-inch long cylinders from drilled shafts for the purpose of confirming the presence of defects (if suspected based on visual indications during or following the pour), where the drilled shafts are subsequently determined by the Resident to not contain defects, will be paid for at the contract unit price per each cylinder. This shall constitute full compensation for all costs incurred for the cylinder coring in shafts without defects, including set-up, access, materials, labor, observation, laboratory testing of samples, core bit wear, and grouting of core holes.

Payment will be made under:

Pay Item		Pay Unit
501.8016	6 Foot Diameter Drilled Shaft	Linear Foot
501.804	Drilling Equipment Mobilization (Drilled Shaft)	Lump Sum
501.807	Removal of Obstructions	Hour
501.82	Crosshole Sonic Logging Testing	Each
501.83	Drilled Shaft Confirmatory Borings	Linear Foot
501.831	Drilled Shaft - Rock Socket (5.5 ft dia.)	Linear Foot
501.832	Drilled Shaft - Sloping Rock	Hour
501.85	Coring of Drilled Shafts without Defects	Linear Foot

501.86	Drilled Shaft Inspection Device Test	Each
501.861	Concrete Test Cylinders of Shafts without Defects	Each
501.87	Thermal Integrity Profiler Test, Providing For	Each

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
202.19	Removing Existing Bridge (32,500 SF)	1	LS
203.20	Common Excavation	1,550	CY
203.24	Common Borrow	17,300	CY
203.25	Granular Borrow	38,100	CY
203.55	Culvert Bedding Stone	8,300	CY
206.082	Structural Earth Excavation - Major Structures, Plan Quantity	5,800	CY
206.092	Structural Rock Excavation - Major Structures	20	CY
304.10	Aggregate Subbase Course - Gravel	150	CY
403.2081	Hot Mix Asphalt - 12.5 mm (Polymer Modified)	1,200	TON
409.15	Bituminous Tack Coat, Applied	230	G
501.220	Micropiles	58	EA
501.2331	Micropile Verification Load Test (includes Verification Pile)	1	EA
501.2341	Micropile Proof Load Test	3	EA
501.804	Drilling Equipment Mobilization (Micropiles)	1	LS
502.219	Structural Concrete, Abutments and Retaining Walls (4,300 CY)	1	LS
502.239	Structural Concrete Piers (1,270 CY)	1	LS
502.26	Structural Concrete Roadway and Sidewalk Slab on Steel Bridges (3,000 CY)	1	LS
502.31	Structural Concrete Approach Slab (72 CY)	1	LS
502.341	Structural Concrete Roadway Median	14	CY
502.49	Structural Concrete Curbs and Sidewalks (600 CY)	1	LS
502.565	Concrete Fill	140	CY
502.77	FRP Bridge Drain - Type: A	7	EA
502.77	FRP Bridge Drain - Type: F	7	EA
503.12	Reinforcing Steel, Fabricated and Delivered	958,100	LB
503.13	Reinforcing Steel, Placing	958,100	LB
503.17	Mechanical / Welded Splice	301	EA
503.26	Stainless Steel Reinforcement, Fabricated and Delivered	985,000	LB
503.27	Stainless Steel Reinforcement, Placing	985,000	LB
504.702	Structural Steel Fabricated and Delivered, Welded (7,260,000 LBS)	1	LS
504.71	Structural Steel Erection (7,260,000 LBS)	1	LS
505.08	Shear Connectors (17,888 EA)	1	LS
507.0823	Steel Bridge Rail, 3 Bar S3-TL4 (3,723 LF)	1	LS
508.14	High Performance Waterproofing Membrane (7,600 SY)	1	LS
512.081	French Drains (470 LF)	1	LS
513.22	Crushed Stone Slope Protection	250	SY
515.21	Protective Coating for Concrete Surfaces (3,400 SY)	1	LS
521.23	Expansion Device - Finger Joint (Abutment 1) (65 LF)	1	EA
521.23	Expansion Device - Finger Joint (Abutment 2) (103 LF)	1	EA
523.52	Bearing Installation	31	EA
523.5551	Pot or Disc Bearings, Fixed	12	EA
523.5552	Pot or Disc Bearings, Expansion	19	EA
524.301	Temporary Structural Support (Earth)	1	LS
524.301	Temporary Structural Support (Girder 4)	1	LS
524.40	Protective Shield (3000 SY)	1	LS
526.301	Temporary Concrete Barrier, Type 1 (260 LF)	1	LS
526.34	Permanent Concrete Transition Barrier	4	EA
606.65	Guardrail Thrie Beam - Single Rail	38	LF
606.66	Terminal End Thrie Beam	2	EA
607.1706	Temporary Chain Link Fence - 8 Foot (1250 LF)	1	LS
607.183	Chain Link Snow Fence, 33" (620 LF)	1	LS
610.08	Plain Riprap	170	CY
610.16	Heavy Riprap	28,900	CY
615.07	Loam	700	CY
618.14	Seeding Method Number 2	113	UNIT
619.12	Mulch	113	UNIT
619.14	Erosion Control Mix	700	CY
620.58	Erosion Control Geotextile	24,000	SY
620.60	Separation Geotextile	1,850	SY
626.11	Precast Concrete Junction Box	3	EA
626.22	Non-Metallic Conduit	2,200	LF
626.221	Non-Metallic Conduit, Concrete Encased	410	LF
627.733	4" White or Yellow Painted Pavement Marking Line	6,200	LF
627.76	Temporary Pavement Marking Line, White or Yellow	1	LS
629.05	Hand Labor, Straight Time	120	HR
631.10	Air Compressor (Including Operator)	40	HR
631.11	Air Tool (Including Operator)	80	HR
631.12	All Purpose Excavator (Including Operator)	80	HR
631.172	Truck - Large (Including Operator)	120	HR
631.22	Front End Loader (Including Operator)	40	HR
634.160	Highway Lighting	1	LS
634.2042	Luminaires - LED	10	EA
634.210	Conventional Light Standard	10	EA
634.803	Aesthetic Lighting	1	LS
639.18	Field Office Type A - Modified	1	EA
639.19	Field Office Type B	1	EA
641.35	Flagpole	3	EA
645.103	Demount Guide Sign	11	EA
645.291	Roadside Guide Signs, Type II	60	SF
645.292	Regulatory, Warning, Confirmation and Route Marker Assembly Sign, Type II	160	SF
652.312	Type III Barricades	5	EA
652.33	Drum	50	EA
652.34	Cone	50	EA

1

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
652.35	Construction Signs	300	SF
652.361	Maintenance of Traffic Control Devices	1	LS
652.38	Flaggers	400	HR
652.41	Portable-Changeable Message Sign	10	EA
653.24	4 Inch Polysterene Plastic Insulation	320	SY
656.75	Temporary Soil Erosion and Water Pollution Control	1	LS
659.10	Mobilization	1	LS
660.21	On-The-Job Training	7,000	HR

ESTIMATED QUANTITIES
ITEMS SPECIFIC TO GENERAL SERVICES ADMINISTRATION

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
626.22	Non-Metallic Conduit	300	LF
626.221	Non-Metallic Conduit, Concrete Encased	150	LF
634.2042	Luminaires - LED	3	EA
634.210	Conventional Light Standard	3	EA
645.12	Overhead Guide Sign (Sta 103+30)	1	LS
645.12	Overhead Guide Sign (Sta 112+85)	1	LS
910.301	Special Work - Utility Conduit (Bridge Only)	1	LS
910.301	Special Work - Utility Conduit (Approach Only)	1	LS

ESTIMATED QUANTITIES
ITEMS SPECIFIC TO TOWN OF MADAWASKA

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
801.011	Bypass Pumping System	1	LS
801.183	12-Inch PVC Sanitary Sewer (DR-18)	380	LF
803.173	Sewer Manhole - 4 Foot Diameter	3	EA
805.293	Additional Select Backfill Material	20	CY
827.302	Unsuitable Soil Excavation - Below Grade	20	CY
827.304	Trench Rock Excavation	20	CY
827.33	Trench Insulation - 2 Inch	40	LF

ESTIMATED QUANTITIES
ITEMS SPECIFIC TO CITY OF EDMUNDSTON

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
910.301	Special Work - Relocation of Municipal Services (Category B)	1	LS

ESTIMATED QUANTITIES
ITEMS SPECIFIC TO CITY OF EDMUNDSTON

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
910.301	Special Work - Relocation of Municipal Services (Category A)	1	LS

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDOT ASSET NO. E320

STATE OF MAINE
JOSHUA K. OLUND
No. 12130
REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130
P.E. NUMBER

1/28/2021
DATE

PROJ. MANAGER	A. LATHE		
DESIGN-DETAILED	J. Waugh	P. Bishop	11\20
CHECKED-REVIEWED	J. Olund	K. Segal	11\20
DESIGN2-DETAILED2	-	-	-
DESIGN3-DETAILED3	-	-	-
REVISIONS 1	Removed 4" Dia. Conduits		01/21
REVISIONS 2	-	-	-
REVISIONS 3	-	-	-
REVISIONS 4	-	-	-
FIELD CHANGES	-	-	-

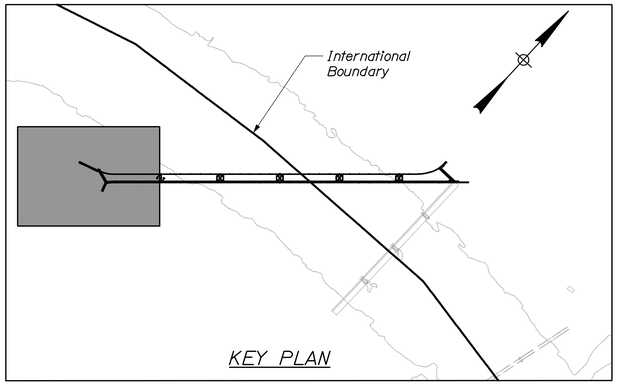
INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

ESTIMATED QUANTITIES

SHEET NUMBER

2

OF 160



NOTES:

1. The LPOE layout shown on these Plans depicts the design intent for the LPOE. The LPOE Design-Build Contractor is responsible for final design of this facility; minor changes to the layout may occur.

Item #626.11 Precast Concrete Junction Box
Location
Sta. 103+24.48, 47.3' Rt.
Sta. 103+40.23, 39.9' Rt.

Item #626.22 Non-Metallic Conduit

Location	Length of Run
Sta. 103+50.15, 0.5' Rt. To Sta. 121+93.21, 7.3' Rt. (2 - 4" Conduit)	1844 LF
Sta. 103+60.20, 23.4' Rt. To Sta. 114+31.25, 26.2' Rt. (1 - 2" Conduit)	1097 LF
Sta. 103+6.19, 25.4' Rt. To Sta. 106+51.25, 26.2' Rt. (1 - 2" Conduit)	296 LF

Item #626.221 Non-Metallic Conduit, Concrete Encased

Location	Length of Run
Sta. 102+15.60, 7.1' Rt. To Sta. 103+56.15, 0.5' Rt. (2 - 4" Conduit)	134 LF
Sta. 102+15.60, 7.1' Rt. To Sta. 103+61.19, 25.4' Rt. (1 - 2" Conduit)	142 LF
Sta. 103+24.48, 47.3' Rt. To Sta. 103+40.23, 39.9' Rt. (1 - 2" Conduit)	13 LF
Sta. 103+24.48, 47.3' Rt. To Sta. 104+25.30, 165.0' Rt. (1 - 2" Conduit)	166 LF
Sta. 103+40.23, 39.9' Rt. To Sta. 103+60.20, 23.4' Rt. (1 - 2" Conduit)	25 LF

Item #634.803 Aesthetic Lighting

Location	Length of Run
Sta. 103+40.23, 39.9' Rt. To Sta. 103+23.45, 45.0' Lt. (1 - 2" Conduit)	85 LF
Sta. 103+23.45, 45.0' Lt. To Sta. 120+73.00, 28.8' Lt. (1 - 2" Conduit)	1764 LF
Sta. 103+86.11, 21.1' Rt. To Sta. 121+78.65, 22.3' Rt. (1 - 2" Conduit)	1800 LF

Item #910.301 Special Work - Utility Conduit (GSA - Bridge Only)

Location	Length of Run
Sta. 103+55.94, 14.4' Rt. To Sta. 106+55.00, 16.0' Rt. (4 - 2" Conduit)	298 LF
Sta. 103+54.53, 11.2' Rt. To Sta. 112+82.00, 26.1' Rt. (4 - 3" Conduit)	932 LF

Item #910.301 Special Work - Utility Conduit (GSA - Approach Only)

Location	Length of Run
Sta. 102+15.60, 7.1' Rt. To Sta. 103+15.51, 34.1' Rt. (4 - 3" Conduit)	104 LF
Sta. 102+15.60, 7.1' Rt. To Sta. 103+55.94, 14.4' Rt. (4 - 2" Conduit)	138 LF
Sta. 102+15.60, 7.1' Rt. To Sta. 103+54.53, 11.2' Rt. (4 - 3" Conduit)	137 LF

Existing Light Pole and Light Fixture to Remain
Limits of Fill (See Abutment Grading Plan Sheet)
Existing Building (Removed By Others)
Install New Pole 103+21, 124' Lt. (By Others)
℄ Brg. Abut. No. 1 Sta. 103+55.89
MH I-30
LPOE Buildings and Inspection Booths by Others (See Note 1)
Remove Sewer Line
MH I-29A
Eastern Maine Railway
Span 1 = 300'-0" (91.44m)
Heavy Riprap
Existing Light Pole and Light Fixture to Remain
Existing Aerial Line to be Removed (By Others)
1 - 2" Conduit (Item 634.803)
Working Line
Sta. 103+55.00 (Back Tangent)
Sta. 103+55.89
POB = STA. 99+96.98
N 29°28'18.67" E
N 47°15'29.46" E
100+00
101+00
102+00
103+00
104+00
105+00
106+00
1 - 2" Conduit (Item 634.803)
Conventional Light Standard (Typ.)
Snow Fence (Typ.)
1 - 2" Conduit (Item 626.22)
Snow Fence (Typ.)
Point of Minimum Vertical Clearance (24'-0 7/8")
4 - 3" Conduit (Item 910.301)
4 - 2" Conduit (Item 910.301)
Proposed Sewer
Install New Light Fixture On Existing Pole (By Others)
Utility Manhole (By Others)
4 - 3" Conduit (Item 910.301)
4 - 2" Conduit (Item 910.301)
1 - 2" Conduit (Item 626.221)
4 - 3" Conduit (Item 910.301)
MH I-29
PC = STA. 103+19.19
PT = STA. 103+81.69
Metallic Conduit (By Others)
1 - 2" Conduit (Item 626.221)
Proposed Guy Wire (By Others)
Project Limit Sta. 101+55.84
Overhead Sign Structure
Precast Concrete Junction Box (Typ.)
Approximate Limits of Stormwater Retention Pond (Typ.) (By Others)
Proposed Utility Pole 104+25, 165' Rt. (By Others)
Overhead Service Line Termination at Existing Pole on Mill Street at Approx. Sta. 104+75, 402' Rt. (By Others)
ST. JOHN RIVER Flow

BRIDGE
CURVE DATA #1
PI = 103+50.90
D = 28°38'52.4"
Δ = 17°47'10.8" Rt.
R = 200.00'
L = 62.09'
T = 31.29'
E = 2.43'

PLAN
25 0 25 50
Scale of Feet

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
2173600
WIN 021736.00
BRIDGE PLANS
MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

JOSHUA K. OLUND No. 12130 — STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER
SIGNATURE
12130
P.E. NUMBER
1/28/2021
DATE

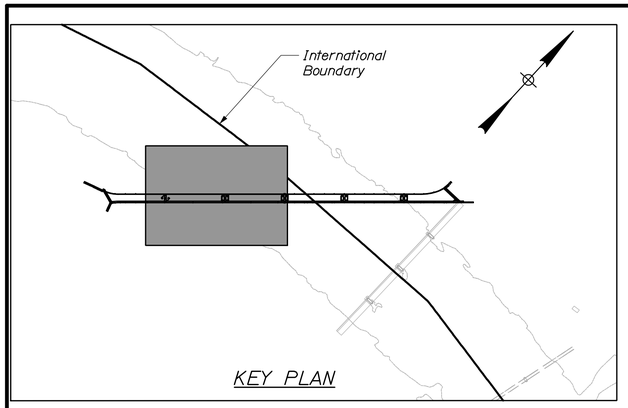
	DATE	BY
PROJ. MANAGER	A. LATHE	
DESIGN-DETAILED	11\20	E. Davidson
CHECKED-REVIEWED	11\20	L. Driscoll
DESIGN2-DETAILED2	-	J. Olund
DESIGN3-DETAILED3	01/21	-
REVISIONS 1	-	Removed 4" Dia. Conduits
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME — EDMUNDSTON, NB

GENERAL PLAN 1

SHEET NUMBER
6
OF 160

Date:1/28/2021
Username:
Division:
Filename: 006_Plan_01.dgn



Province of New Brunswick, Canada
State Of Maine, USA

Heavy Riprap

℄ Brg. Pier No. 1
Sta. 106+55.00

℄ Brg. Pier No. 2
Sta. 109+70.00

℄ Brg. Pier No. 3
Sta. 112+85.00

Span 2 = 315'-0"
(96.01m)

Span 3 = 315'-0"
(96.01m)

90° (Typ.)

Overhead Sign Structure

FRP Bridge Drain - Type: A (Typ.)

106+00 107+00 108+00 109+00 110+00 111+00 N 47°15'29.46" E 112+00 13+00

FRP Bridge Drain - Type: F (Typ.)

1 - 2" Conduit
(Item 626.22)

4 - 3" Conduit
(Item 910.301)

4 - 2" Conduit
(Item 910.301)

60'-0"

See Note 1

See Note 2

Terminate and Cap Conduits at ℄ Pier 1

2:1

Allowable Limits of Temporary Fill (Typ.)

ST. JOHN RIVER Flow

Eastern Maine Railway

PLAN

25 0 25 50
Scale of Feet

NOTES:

1. Install Heavy Riprap around the Pier as shown.

2. Install Heavy Riprap and the upper fill slope along the remainder of the river banks as shown on the Typical Section sheet and where disturbed by Contractor, see General Notes.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE
JOSHUA K. OLUND
No. 12130
REGISTERED PROFESSIONAL ENGINEER
LICENSED

SIGNATURE

P.E. NUMBER 12130

DATE 1/28/2021

BY	DATE
A. LATHE	
E. Davidson	11\20
L. Driscoll	11\20
-	-
-	-
-	-
Removed 4" Dia. Conduits	01/21
-	-
-	-
-	-
-	-

PROJ. MANAGER
DESIGN-DETAILED E. Davidson
CHECKED-REVIEWED L. Driscoll
DESIGN2-DETAILED2 -
DESIGN3-DETAILED3 -

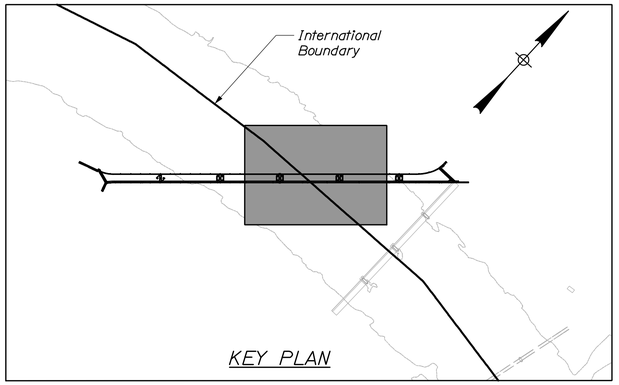
REVISIONS 1 Removed 4"
REVISIONS 2 -
REVISIONS 3 -
REVISIONS 4 -
FIELD CHANGES -

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

GENERAL PLAN 2

SHEET NUMBER
7
OF 160

Filename: 007_Plan_02.dgn Division: Username: Date:1/28/2021



KEY PLAN

See Note 1

Extend Culverts, 5% maximium slope. Outlets shall be riprapped and follow Standard Details 802(05) Roadway Culvert End Slope Treatment and 802(09) Energy Dissipater Riprap Apron. (Typ.) (Incidental to Contract Items)

℄ Brg. Pier No. 3
Sta. 112+85.00

℄ Brg. Pier No. 4
Sta. 116+00.00

Span 3 = 315'-0"
(96.01m)

Span 4 = 315'-0"
(96.01m)

Span 5 = 315'-0"
(96.01m)

Overhead Sign Structure

FRP Bridge Drain - Type: A (Typ.)

90° (Typ.)

See Note 1

111+00 N 47°15'29.46" E 112+00 113+00 114+00 115+00 116+00 117+00 118+00

FRP Bridge Drain - Type: F (Typ.)

1 - 2" Conduit
(Item 626.22)

ST. JOHN RIVER
Flow

Province of New Brunswick, Canada
State Of Maine, USA

PLAN

25 0 25 50
Scale of Feet

NOTES:

1. Install Heavy Riprap and the upper fill slope as shown on the Typical Section Sheet and where disturbed by Contractor. See General Notes.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDOTI ASSET NO. E320

STATE OF MAINE
JOSHUA K. OLUND
No. 12130
REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130

P.E. NUMBER

1/28/2021

DATE

	BY	DATE
A. LATHE	E. Davidson	11\20
E. Davidson	J. Olund	11\20
L. Driscoll	-	-
-	-	-
-	-	01/21
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

PROJ. MANAGER
DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN2-DETAILED2
DESIGN3-DETAILED3
REVISIONS 1
REVISIONS 2
REVISIONS 3
REVISIONS 4
FIELD CHANGES

Removed 4" Dia. Conduits

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

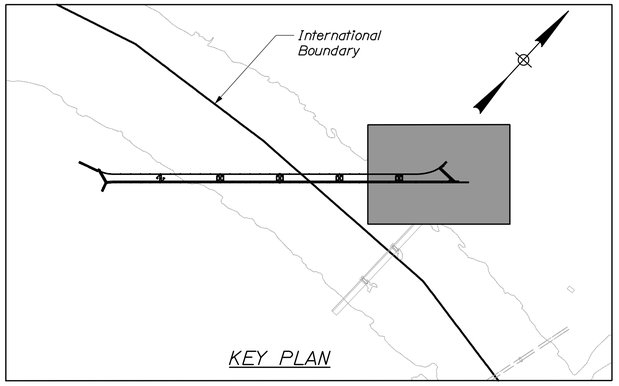
GENERAL PLAN 3

SHEET NUMBER

8

OF 160

Filename: 008_Plan_03.dgn Division: Username: Date:1/28/2021



Item #626.22 Non-Metallic Conduit
Location — *Length of Run*
Sta. 114+50.75, 26.2' Rt. To Sta. 122+07.00, 27.5' Rt. (1 - 2" Conduit) — *795 LF*

Item #626.221 Non-Metallic Conduit, Concrete Encased
Location — *Length of Run*
~~*Sta. 121+93.21, 7.3' Rt. To Sta. 122+63.00, 47.0' Rt. (2 - 4" Conduit)* — *83 LF*~~
Sta. 122+07.00, 27.5' Rt. To Sta. 122+63.00, 47.0' Rt. (1 - 2" Conduit) — *63 LF*

Item #626.11 Precast Concrete Junction Box
Location
Sta. 122+63.00, 47.0' Rt.

℄ Bridge Sta. 120+41.06 =
℄ Outbound Sta. 920+41.06

POB = STA. 920+00.00
PC = STA. 920+41.06
PT = STA. 922+12.39
PC = STA. 1214+42.78
PT = STA. 122+39.89
POE = STA. 124+04.76

℄ Brg. Pier No. 5
Sta. 119+15.00

℄ Brg. Abut. No. 2
Sta. 121+80.57

Span 5 = 315'-0"
(96.01m)

Span 6 = 268'-0"
(81.69m)

Structural Concrete Roadway Median

FRP Bridge Drain - Type: A (Typ.)

℄ Outbound

24'-0"

8'-0"

Sta. 921+53.73
46°49'17"

N 47°15'29.46" E

N 07°34'53.66" W

N 28°42'47.03" E

Rue Saint Francois

Working Line

Project Limit
Sta. 122+42.98

Sta. 121+80.57

℄ Bridge

Point of Minimum Vertical Clearance (23'-2¾")

Precast Concrete Junction Box

Snow Fence (Typ.)

Sta. 121+83.00
(Ahead Tangent)

1 - 2" Conduit
(Item 626.221)

Existing Abutment (To Be Removed)

Approach Sidewalk (By Others)

Limits of Fill
(See Abutment Grading Plan Sheet)

Approximate Location of Existing Fiber360 Line

Canadian National Railroad

2:1

Heavy Riprap

180'-0" (See Note 2)

FRP Bridge Drain - Type: F (Typ.)

ST. JOHN RIVER Flow

See Note 1

Existing International Bridge
(To Be Removed)

BRIDGE
CURVE DATA #2
PI = 121+91.76
D = 19°05'54.9"
Δ = 18°32'42.4" Lt.
R = 300.00'
L = 97.10'
T = 48.98'
E = 3.97'

OUTBOUND
CURVE DATA #1
PI = 921+33.92
D = 32°00'31.7"
Δ = 54°50'22.1" Lt.
R = 179.00'
L = 171.33'
T = 92.86'
E = 22.65'

NOTES:

1. Install heavy riprap and the upper fill slope as shown on the Typical Section Sheet and where disturbed by Contractor. See General Notes.

2. Install Heavy Riprap as Shown.

PLAN
25 0 25 50
Scale of Feet

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — DESIGNING — LICENSED PROFESSIONAL

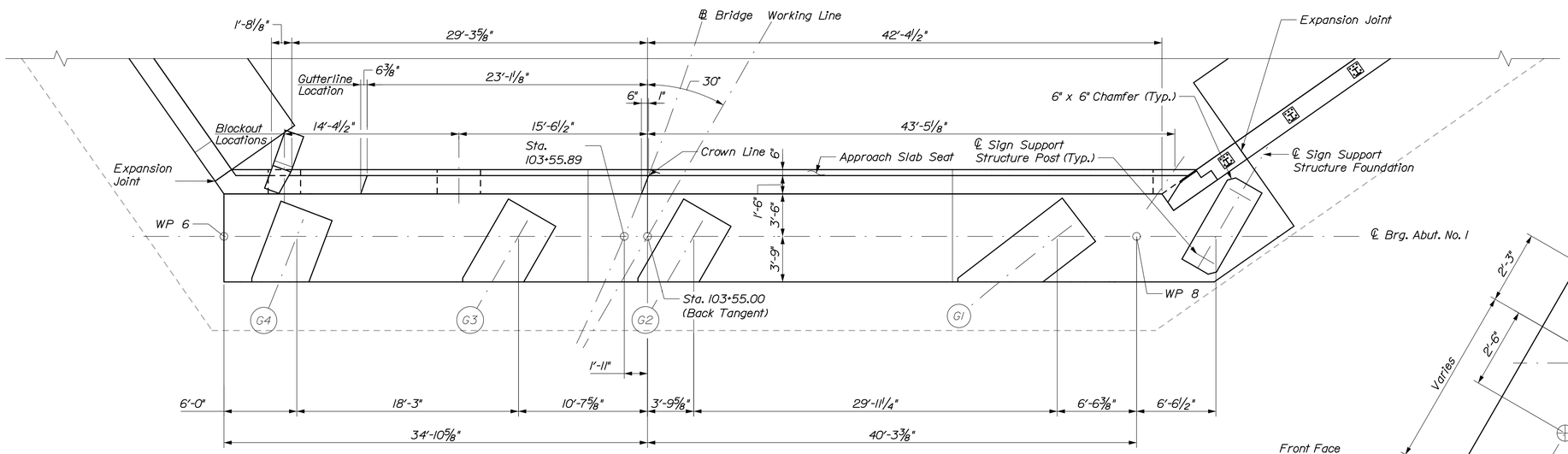
SIGNATURE
12130
P.E. NUMBER
1/28/2021
DATE

	A. LATHE	DATE
PROJ. MANAGER		
DESIGN-DETAILED	E. Davidson	11\20
CHECKED-REVIEWED	L. Driscoll	11\20
DESIGN2-DETAILED2	-	-
DESIGN3-DETAILED3	-	-
REVISIONS 1	Removed 4" Dia. Conduits	01/21
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

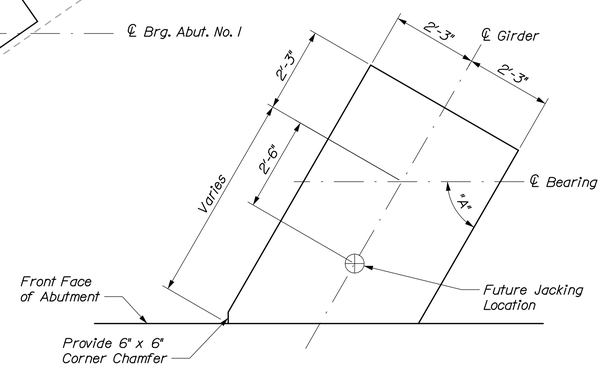
INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

GENERAL PLAN 4

SHEET NUMBER
9
OF 160



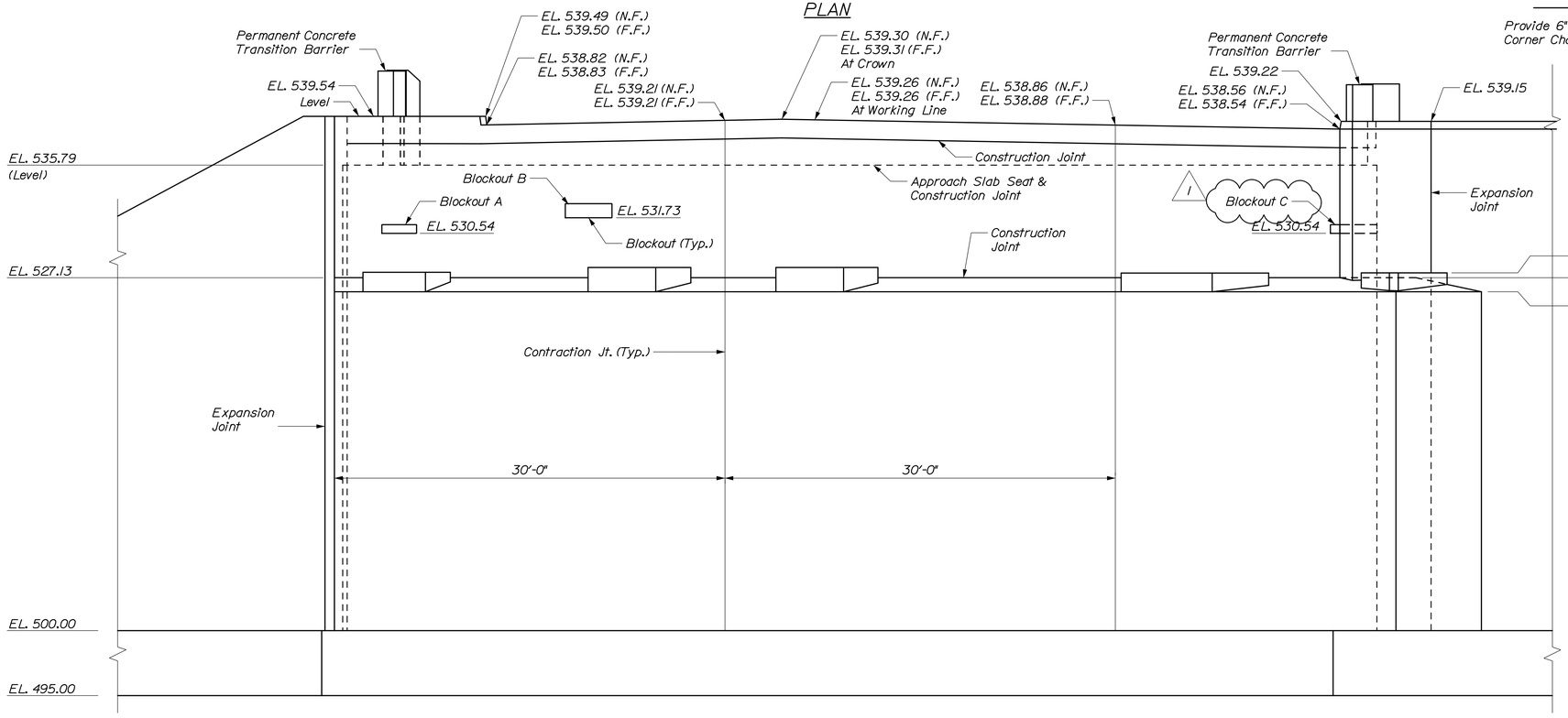
PLAN



BEARING PEDESTAL DETAIL

PEDESTAL ELEVATIONS	
Girder	Elevation
G1	527.49
G2	527.92
G3	527.92
G4	527.54

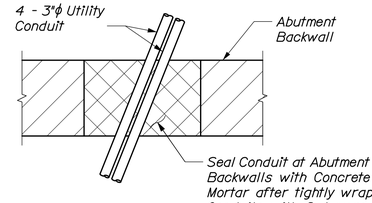
BEARING ANGLES	
Girder	A
G1	37°17'23"
G2	60°
G3	60°
G4	69°17'10"



ELEVATION

(Bridge Rail not shown for clarity)

UTILITY BLOCKOUTS		
Blockout	W x L	Conduits
A	32" x 8"	(3) 2"ϕ
B	43" x 13"	(4) 2" & (4) 3"ϕ
C (N.F.)	9" x 8"	(1) 2"ϕ
C (F.F.)	37" x 8"	(1) 2"ϕ



CONDUIT BLOCKOUT DETAIL

(3" Conduit Blockout shown, other Conduits similar)

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130

P.E. NUMBER

1/28/2021

DATE

	BY	DATE
A. LATHE	C. Wong	11\20
J. Yatlanes	J. Olund	11\20
T. McCabe	-	-
-	-	-
-	-	01/21
Remove 4" Con Blockout	-	-
-	-	-
-	-	-
-	-	-

PROJ. MANAGER
DESIGN-DETAILED
CHECKED-REVIEWED
DESIGN2-DETAILED2
DESIGN3-DETAILED3
REVISIONS 1
REVISIONS 2
REVISIONS 3
REVISIONS 4
FIELD CHANGES

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

ABUTMENT 1
PLAN AND ELEVATION

SHEET NUMBER

50

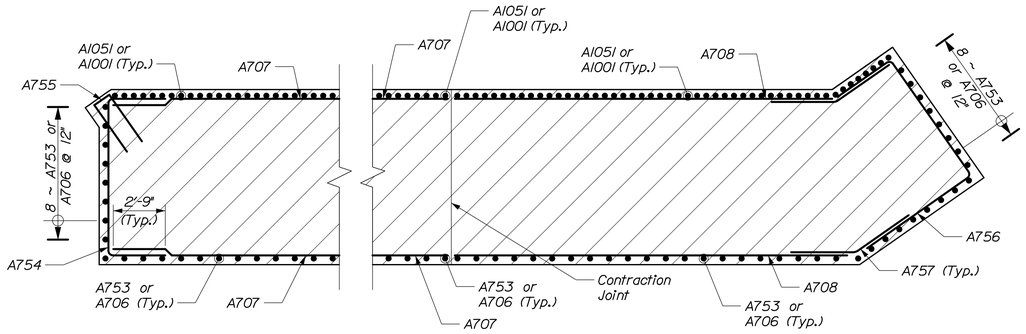
OF 160

HNTB

Filename: 050_Abutment 1 Plan and Elevation.dgn Division:

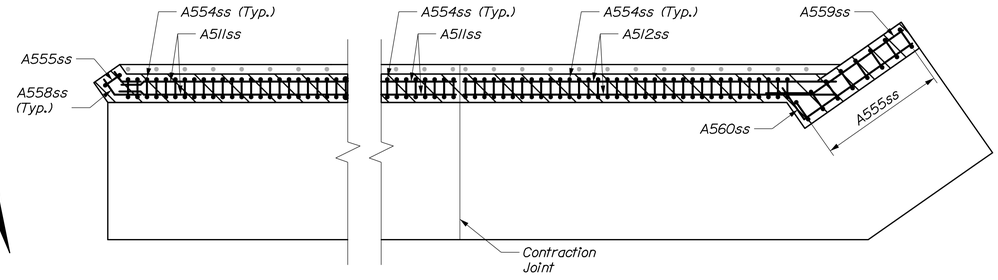
Username:

Date:1/28/2021

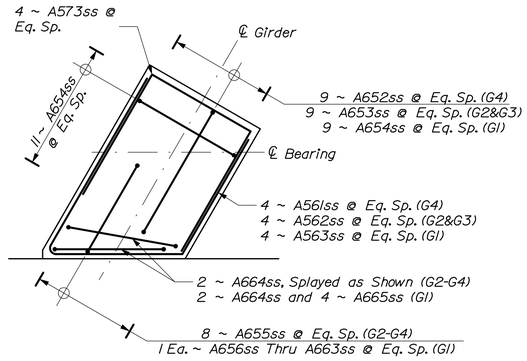


SECTION A-A

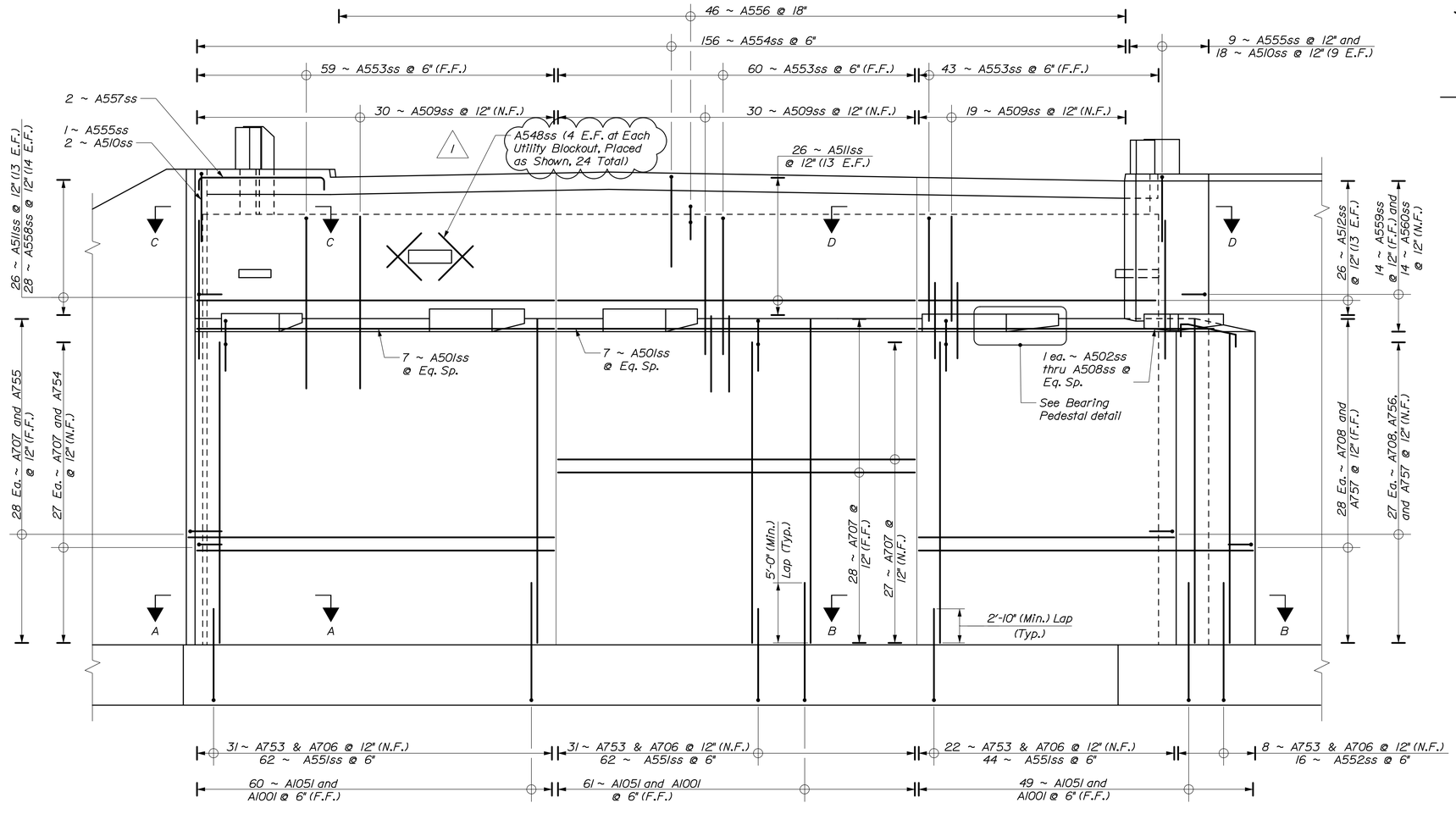
SECTION B-B



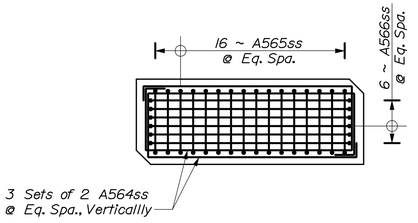
SECTION C-C



SECTION D-D



REINFORCING ELEVATION



OVERHEAD SIGN STRUCTURE PEDESTAL REINFORCEMENT PLAN

(Space Bars to Avoid Conflicts With Bearing Anchor Rods)

BEARING PEDESTAL DETAIL

(Space Bars to Avoid Conflicts With Bearing Anchor Rods)

Notes:

1. Coordinate verical location of utility and bridge lighting conduit blockouts with placement of bridge supported utility and bridge lighting conduits. Place to clear bottom of curtain trough by a minimum of 3". Adjust spacing of reinforcement at blockouts.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

BRIDGE NO. 2399

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

P.E. NUMBER 12130

DATE 1/28/2021

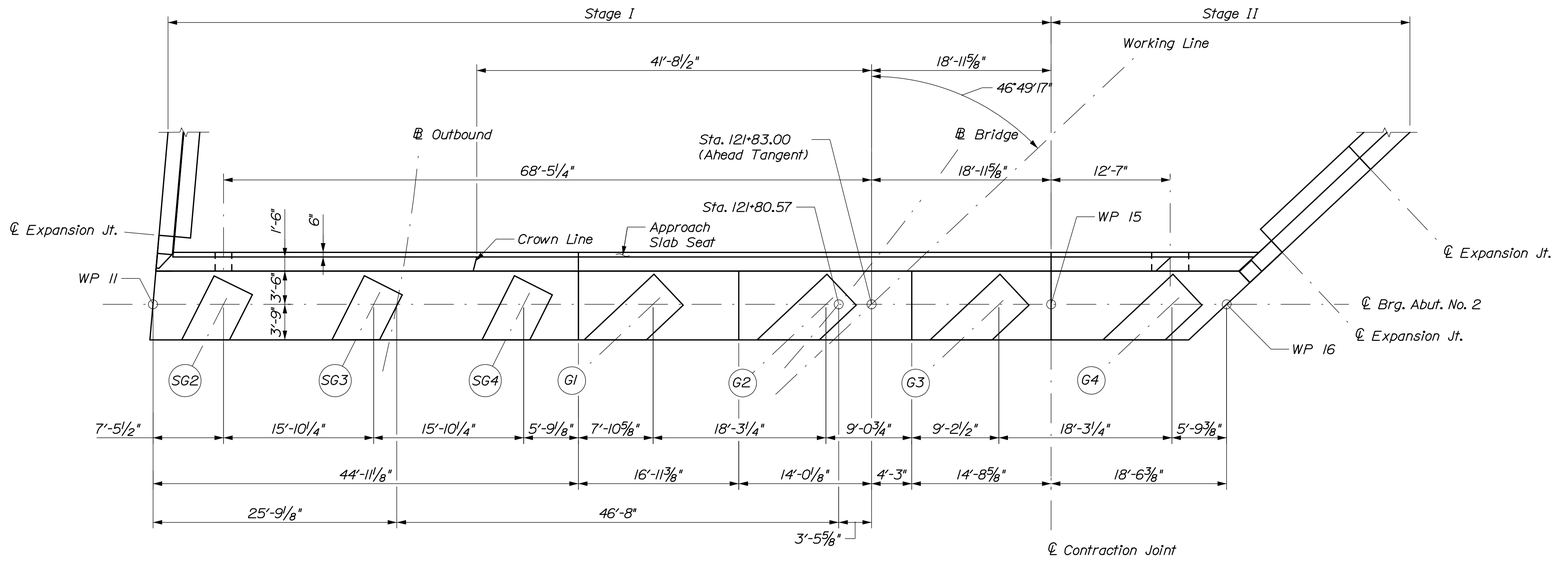
PROJ. MANAGER	A. LATHE		
DESIGN-DETAILED	J. Burns	P. Bishop	11\20
CHECKED-REVIEWED	J. Wough	J. Olund	11\20
DESIGN2-DETAILED2	-	-	-
DESIGN3-DETAILED3	-	-	-
REVISIONS 1	Remove 4" Con. Blockout		01/21
REVISIONS 2	-	-	-
REVISIONS 3	-	-	-
REVISIONS 4	-	-	-
FIELD CHANGES	-	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME — EDMUNDSTON, NB

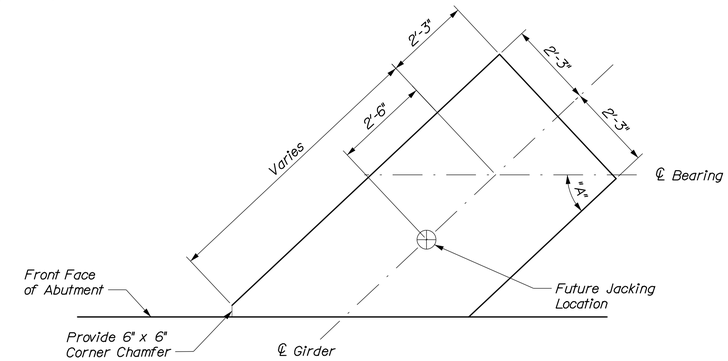
ABUTMENT 1 REINFORCING

SHEET NUMBER 51 OF 160

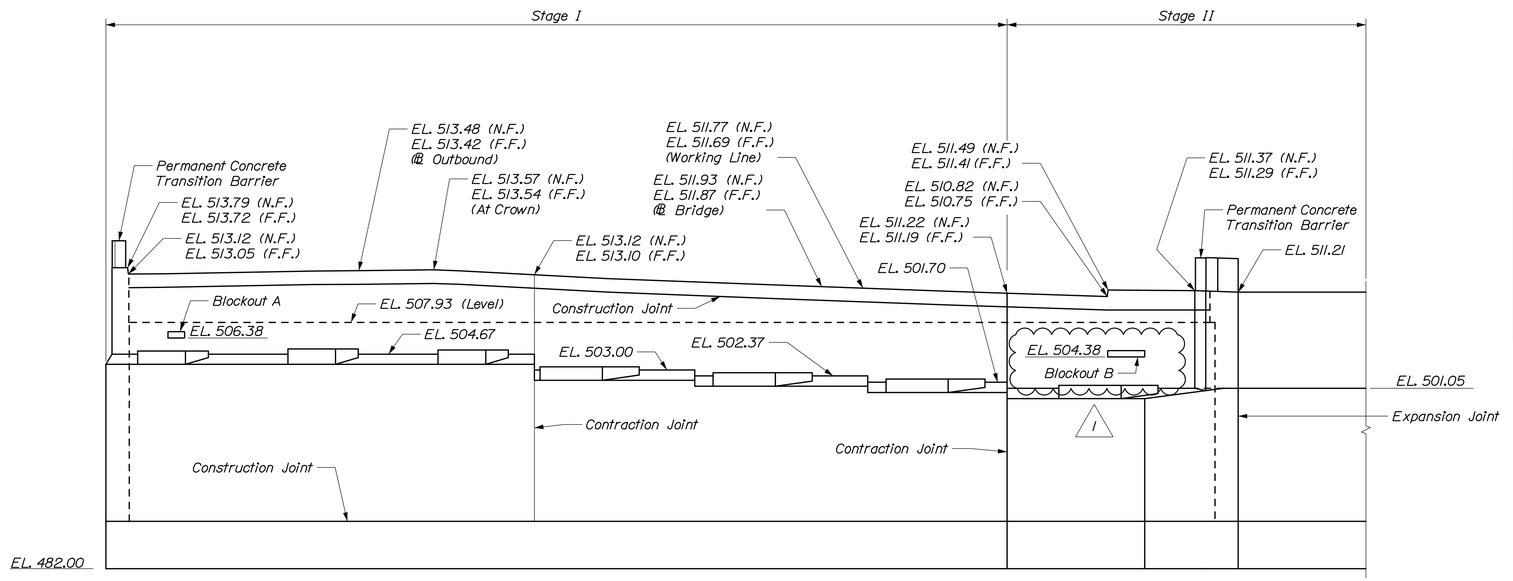
Filename: 051_Abutment 1 Reinforcement.dgn Division: Username: Date:1/28/2021



PLAN



BEARING PEDESTAL DETAIL



ELEVATION
(Micropiles not shown for clarity)

PEDESTAL ELEVATIONS	
Girder	Elevation
SG2	505.00
SG3	505.22
SG4	505.11
G1	503.33
G2	502.71
G3	502.03
G4	501.38

BEARING ANGLES	
G	A
SG2	63°10'43"
SG3	63°10'43"
SG4	63°10'43"
G1	43°10'43"
G2	43°10'43"
G3	43°10'43"
G4	43°10'43"

UTILITY BLOCKOUTS		
Blockout	W x L	Conduits
A	21" x 8"	(1) 2" ϕ
B	50" x 8"	(3) 2" ϕ

1

NOTE:
See "Abutment 1 Plan and Elevation" Sheet for utility blockout details.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE
JOSHUA K. OLUND
No. 12130
REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130
P.E. NUMBER

1/28/2021
DATE

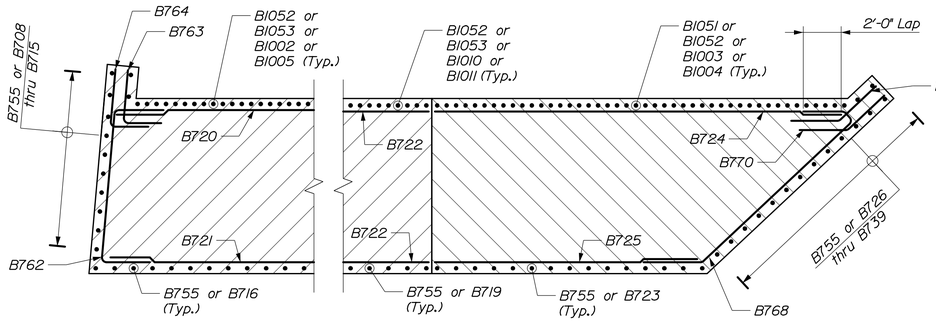
	BY	DATE
PROJ. MANAGER	A. LATHE	
DESIGN-DETAILED	I. McCabe	11\20
CHECKED-REVIEWED	J. Waugh	11\20
DESIGN2-DETAILED2	-	-
DESIGN3-DETAILED3	-	-
REVISIONS 1	Remove 4" Con Blockout	01/21
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

ABUTMENT 2
PLAN AND ELEVATION

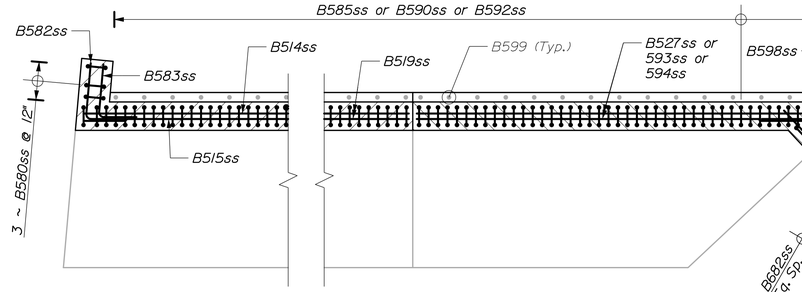
SHEET NUMBER
59
OF 160

Filename: 059_Abutment 2 Plan and Elevation.dgn Division: Username: Date:1/28/2021

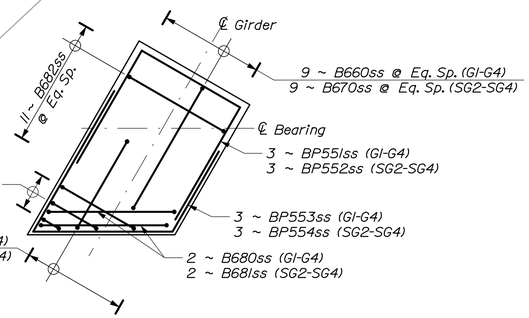


SECTION A-A

SECTION B-B



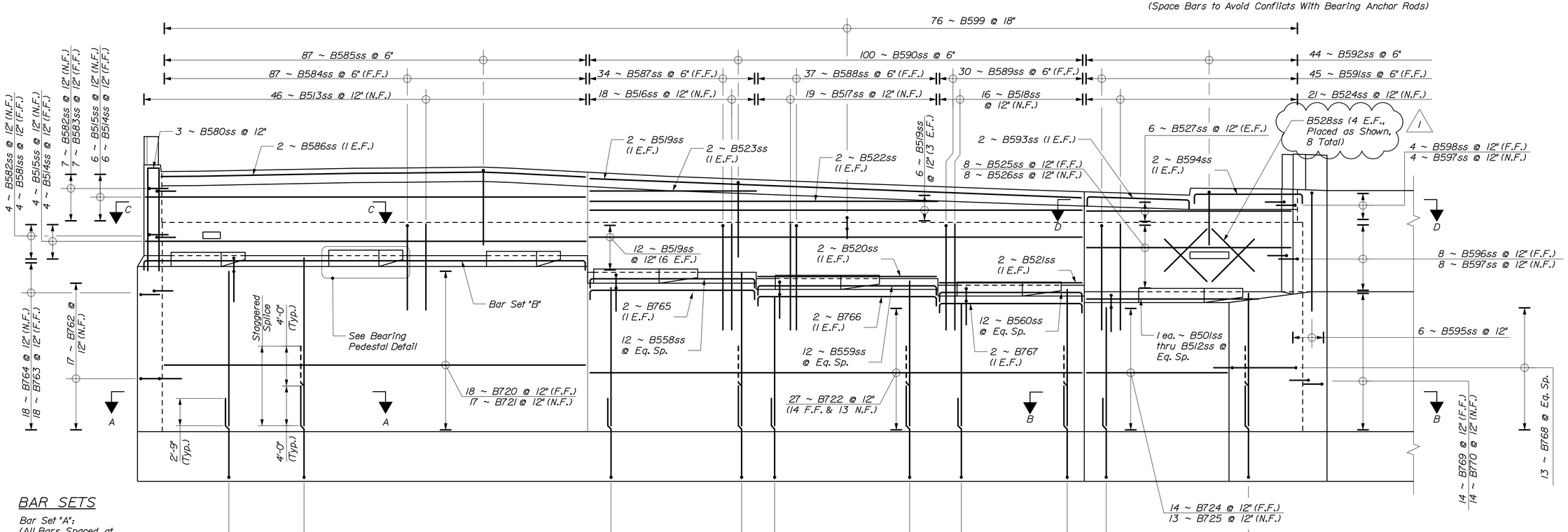
SECTION C-C



SECTION D-D

BEARING PEDESTAL DETAIL

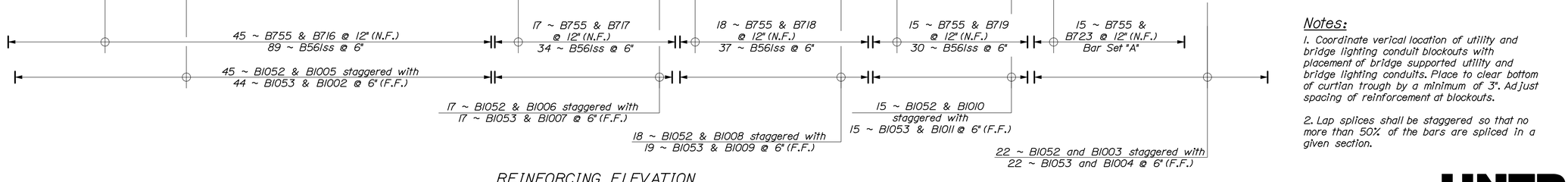
(Space Bars to Avoid Conflicts With Bearing Anchor Rods)



BAR SETS

Bar Set "A":
(All Bars Spaced at Eq. Spa.)
18 ~ B561ss
1 Ea. ~ B562ss thru B579ss

Bar Set "B":
(All Bars Spaced at Eq. Spa.)
1 ~ B550ss
2 ~ B551ss
1 ~ B552ss
2 ~ B553ss
1 ~ B554ss
3 ~ B555ss
1 ~ B556ss
1 ~ B557ss



REINFORCING ELEVATION

Notes:

1. Coordinate verical location of utility and bridge lighting conduit blockouts with placement of bridge supported utility and bridge lighting conduits. Place to clear bottom of curtian trough by a minimum of 3". Adjust spacing of reinforcement at blockouts.

2. Lap splices shall be staggered so that no more than 50% of the bars are spliced in a given section.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

BRIDGE PLANS

STATE OF MAINE · REGISTERED PROFESSIONAL ENGINEER · JOSHUA K. OLUND No. 12130

SIGNATURE

P.E. NUMBER 12130

DATE 1/28/2021

PROJ. MANAGER	A. LATHE	DATE
DESIGN-DETAILED	J. McCabe	11\20
CHECKED-REVIEWED	C. Wong	11\20
DESIGN2-DETAILED2	J. Wough	-
DESIGN3-DETAILED3	J. Olund	-
REVISIONS 1	Remove 4" Con. Blockout	01/21
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

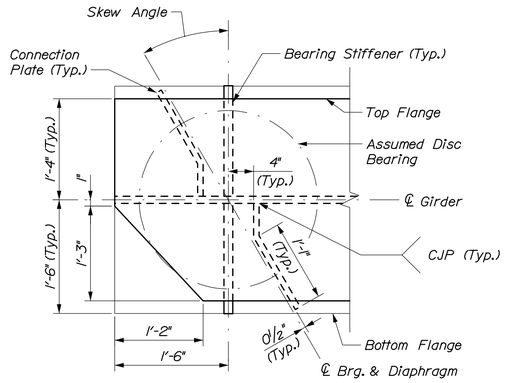
INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

ABUTMENT 2 REINFORCING

SHEET NUMBER

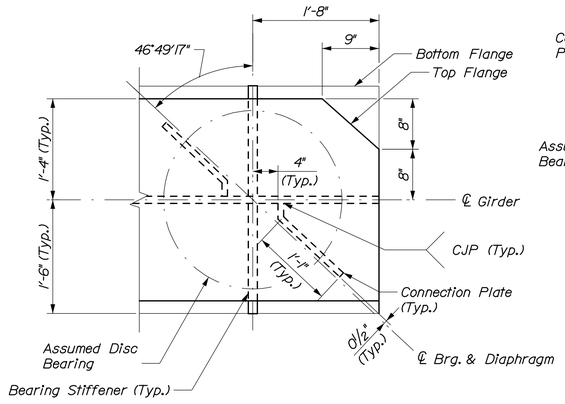
60

OF 160



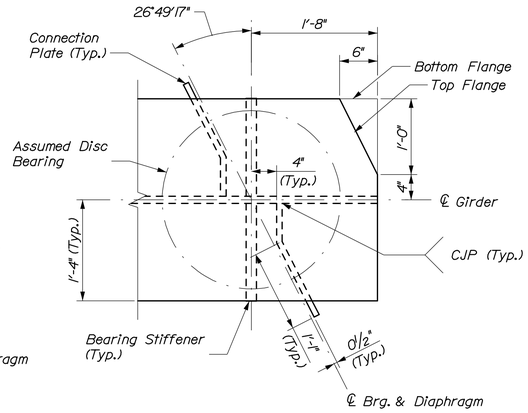
ABUTMENT 1 STIFFENER/CONNECTION PLATE AND CORNER CLIP DETAIL

(Omit bent connection plate on fascia side of G1 and G4)



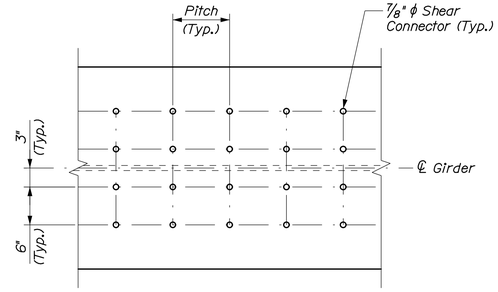
ABUTMENT 2 STIFFENER/CONNECTION PLATE AND CORNER CLIP DETAIL

(Omit bent connection plate on fascia side of G4)



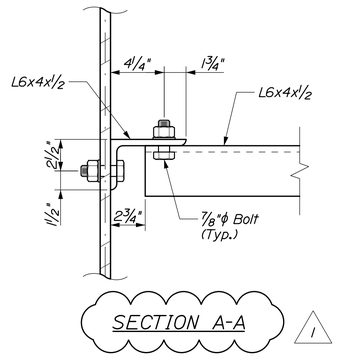
ABUTMENT 2 STIFFENER/CONNECTION PLATE AND CORNER CLIP DETAIL

(Omit bent connection plate on fascia side of SG2)



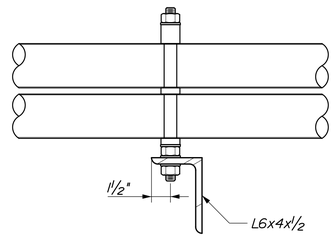
QUAD STUD LAYOUT

(Triple and Double Shear Connector arrangements shall be in accordance with Standard Detail 505(01))



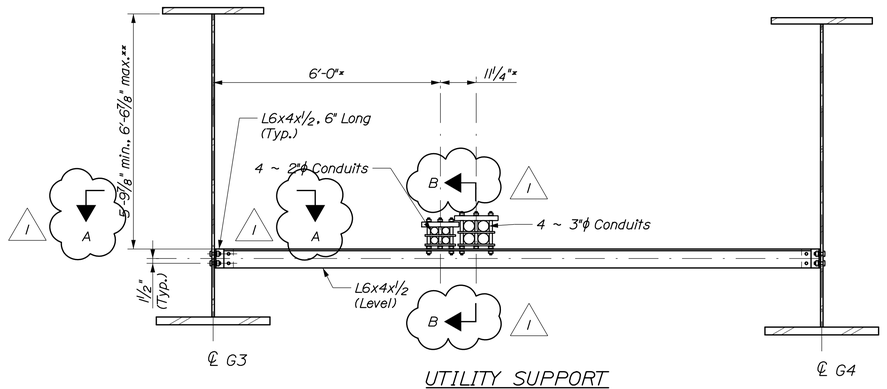
SECTION A-A

1



SECTION B-B

1



UTILITY SUPPORT

Abutment 1 to Pier 3
Not to Scale

* Horizontal dimensions to conduits are based on 1" spacers between conduits.
** Vertical dimension min. and max. given to account for difference between girder depths at midspans and piers.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDOT ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130

P.E. NUMBER

1/28/2021

DATE

	BY	DATE
PROJ. MANAGER	A. LATHE	
DESIGN-DETAILED	C. Mancini	11\20
CHECKED-REVIEWED	T. Poulin	11\20
DESIGN2-DETAILED2	-	-
DESIGN3-DETAILED3	-	-
REVISIONS 1	Removed 4" Dia. Conduits	01/21
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME — EDMUNDSTON, NB

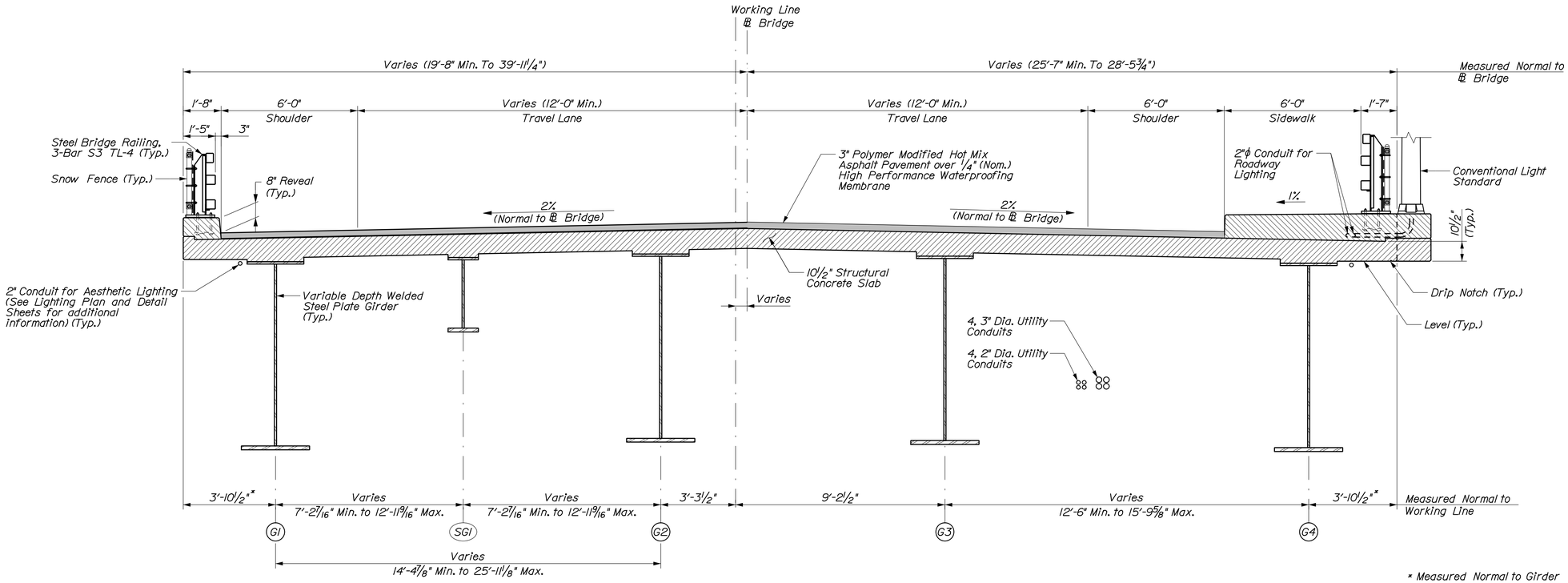
GIRDER DETAILS 3

SHEET NUMBER

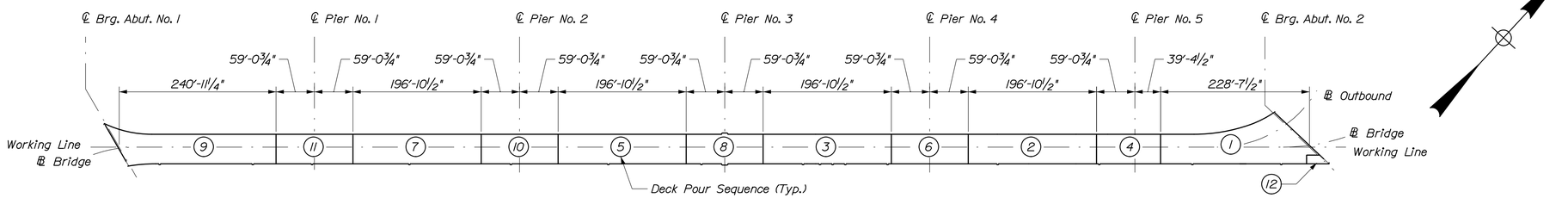
87

OF 160

Filename: 087_Girder Details 3 - General Details.dgn Division: Username: Date:1/28/2021



PROPOSED TRANSVERSE SECTION - SPAN 1 - FLARED END



DECK POUR SEQUENCE

SUPERSTRUCTURE NOTES:

1. The theoretical blocking used for design of the structure is 6 inches at the centerline of bearing of the abutments and piers. SG2, SG3 and SG4 have a tapered theoretical blocking of 10 inches at the intersection of G1 to 6 inches at Abutment No. 2. Refer to Standard Detail 502(03) for blocking details.

2. Reinforcing steel shall have a minimum concrete cover of 2 inches unless otherwise noted.

3. Adjust reinforcing steel to fit around the bridge drains in a manner approved by the Resident. Do not cut transverse reinforcing bars.

4. Form a one inch V-groove on the fascias at the horizontal joint between the curb and slab.

5. Unless the superstructure slab concrete is placed in one continuous operation, the placement shall follow the Deck Pour Sequence identified herein. Successive partial placements shall proceed from the low end of the previous placement. Concrete in a partial placement shall be kept plastic until the entire section is placed. A minimum of 5 days shall elapse between successive partial placements. Alternate superstructure slab concrete placement sequences shall be approved by the Resident.

6. With the exception of localized concrete joint header blockouts, the superstructure slab and backwall concrete shall be in place before the Expansion Device is fixed in position.

7. The Contractor shall install Transition Barrier vertical closed stirrups, prior to the placement of the curb or sidewalk concrete.

8. The use of Precast Concrete Deck Panels will not be allowed on this project.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE 12130

P.E. NUMBER

DATE 1/28/2021

PROJ. MANAGER	A. LATHE		
DESIGN-DETAILED	J. Olund	E. Tobias	11\20
CHECKED-REVIEWED	J. Olund	T. Poulin	11\20
DESIGN2-DETAILED2	-	K. Segal	-
DESIGN3-DETAILED3	-	-	-
REVISIONS 1	Removed 4" Dia. Conduits		01/21
REVISIONS 2	-	-	-
REVISIONS 3	-	-	-
REVISIONS 4	-	-	-
FIELD CHANGES	-	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME — EDMUNDSTON, NB

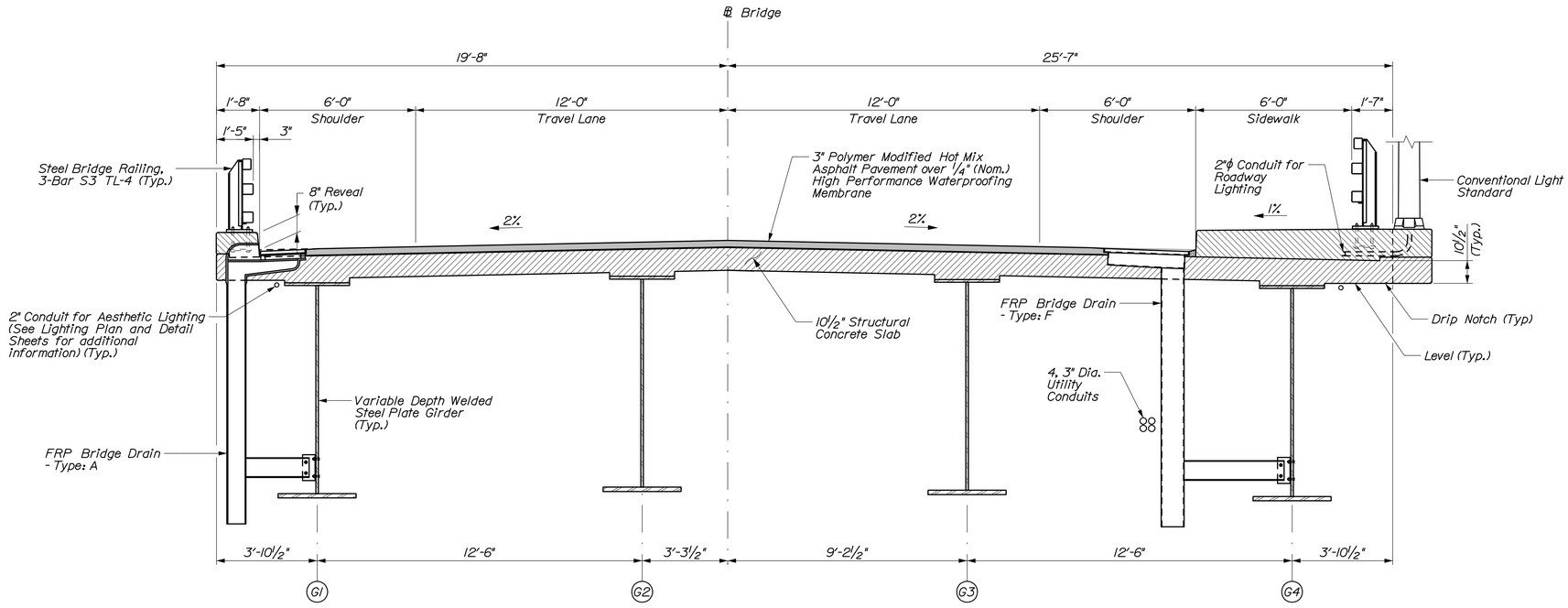
TRANSVERSE SECTION - SPAN 1 - FLARED END

SHEET NUMBER 99 OF 160

Username: Date:1/28/2021

Division:

Filename: 099_Transverse Section - Span 1.dgn



PROPOSED TRANSVERSE SECTION

HNTB

Filename: 100_Transverse Section - Spans 2-5.dgn Division: Username: Date:1/28/2021

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE · JOSHUA K. OLUND · No. 12130 · REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130

P.E. NUMBER

1/28/2021

DATE

PROJ. MANAGER	A. LATHE		
DESIGN-DETAILED	J. Olund	E. Tobias	11\20
CHECKED-REVIEWED	T. Poulin	K. Segal	11\20
DESIGN2-DETAILED2	-	-	-
DESIGN3-DETAILED3	-	-	-
REVISIONS 1	Removed 4" Dia. Conduits		01/21
REVISIONS 2	-	-	-
REVISIONS 3	-	-	-
REVISIONS 4	-	-	-
FIELD CHANGES	-	-	-

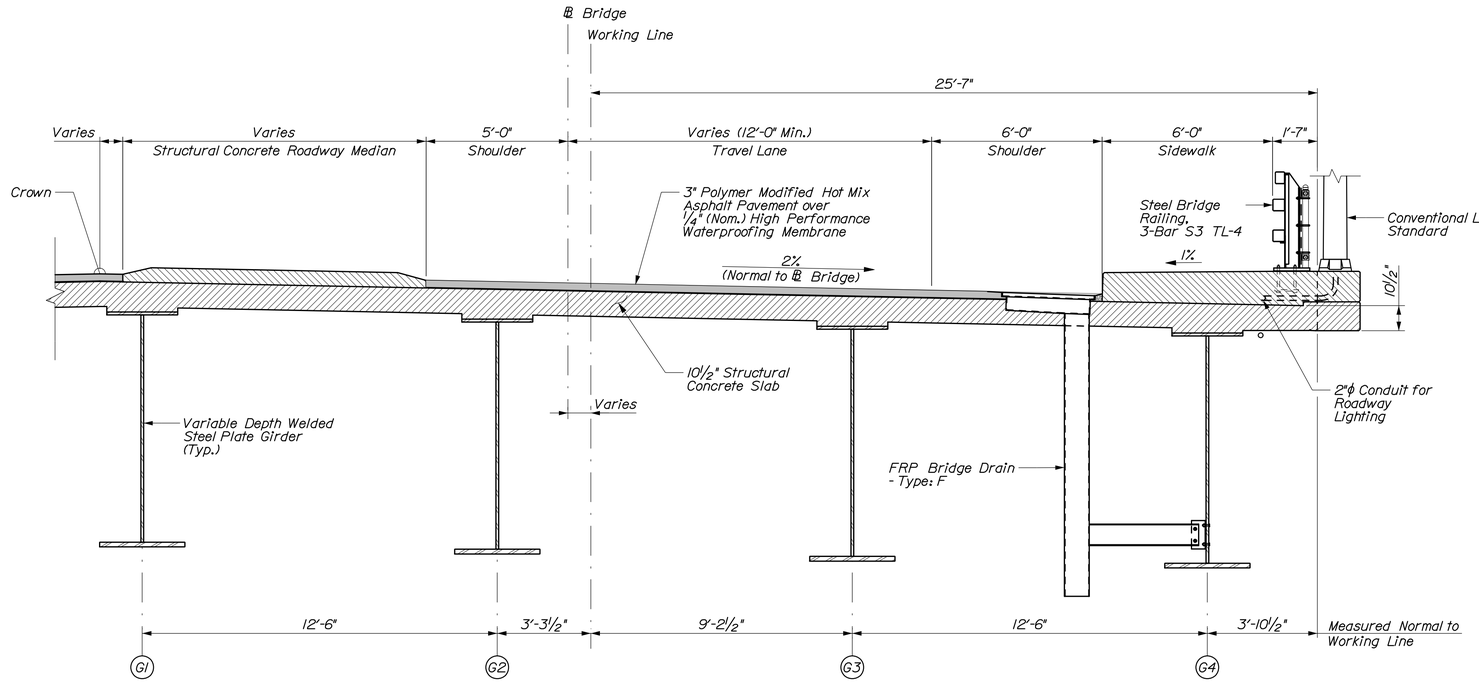
INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

TRANSVERSE SECTION

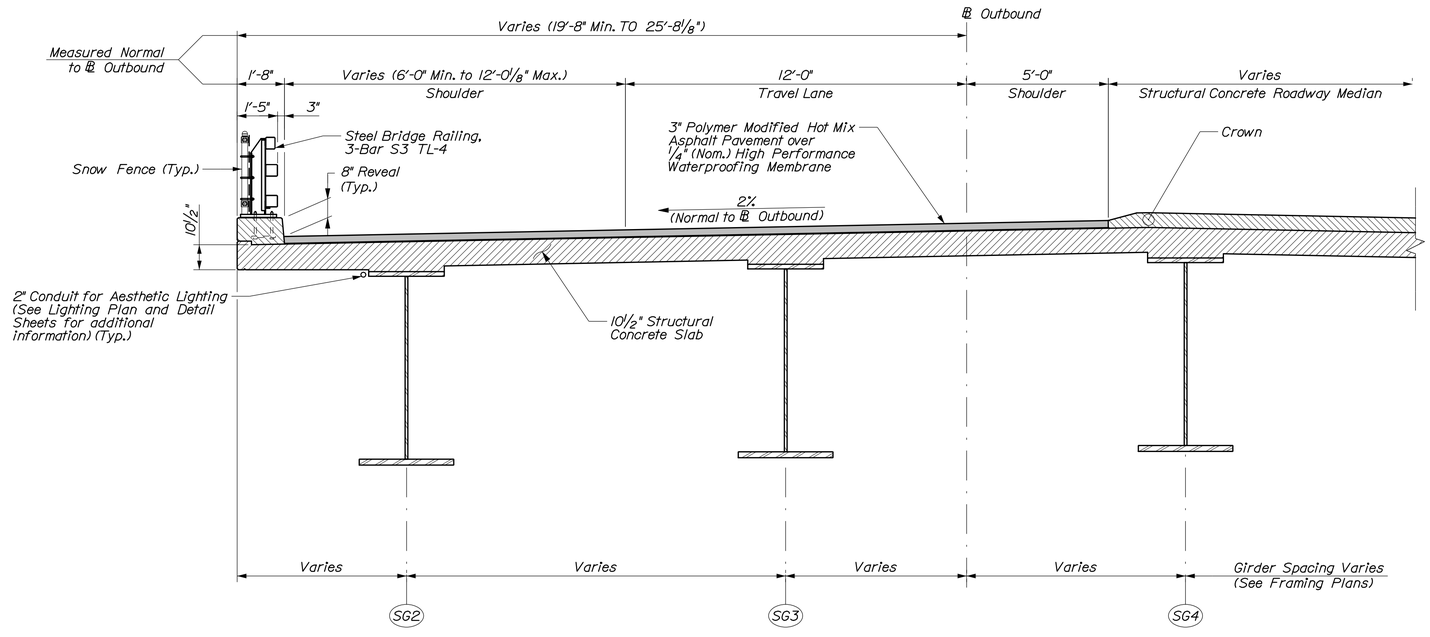
SHEET NUMBER

100

OF 160



RIGHT SECTION
(Shown Normal to Working Line)



LEFT SECTION
(Shown Normal to ℄ Outbound)

PROPOSED TRANSVERSE SECTION - SPAN 6 - FLARED END

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

P.E. NUMBER 12130

DATE 1/28/2021

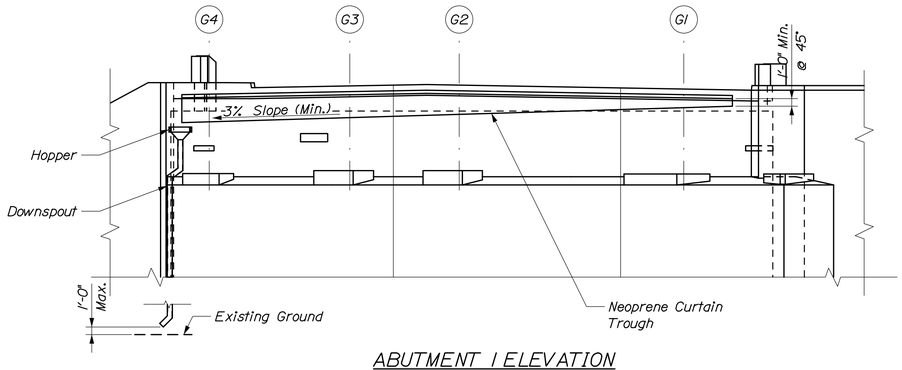
PROJ. MANAGER	A. LATHE		
DESIGN-DETAILED	J. Olund	E. Tobias	11\20
CHECKED-REVIEWED	T. Poulin	K. Segal	11\20
DESIGN2-DETAILED2	-	-	-
DESIGN3-DETAILED3	-	-	-
REVISIONS 1	Removed 4" Dia. Conduits		01/21
REVISIONS 2	-	-	-
REVISIONS 3	-	-	-
REVISIONS 4	-	-	-
FIELD CHANGES	-	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME — EDMUNDSTON, NB

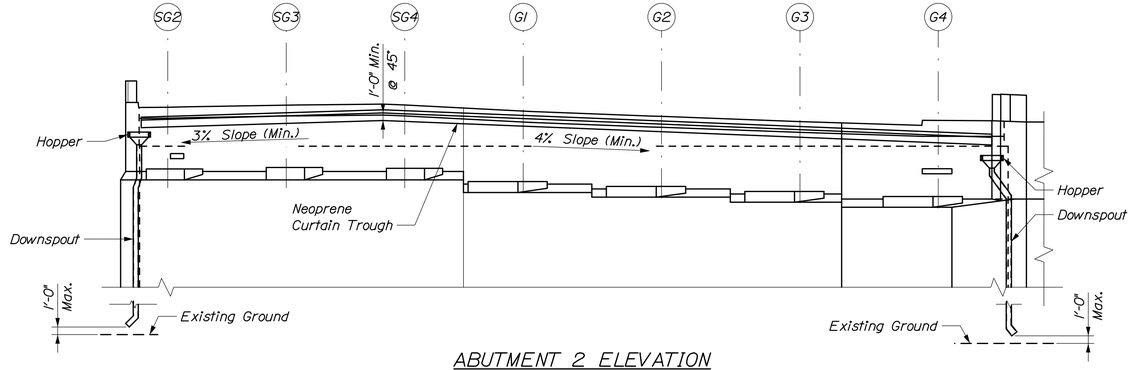
TRANSVERSE SECTION - SPAN 6 - FLARED END

SHEET NUMBER
101
OF 160

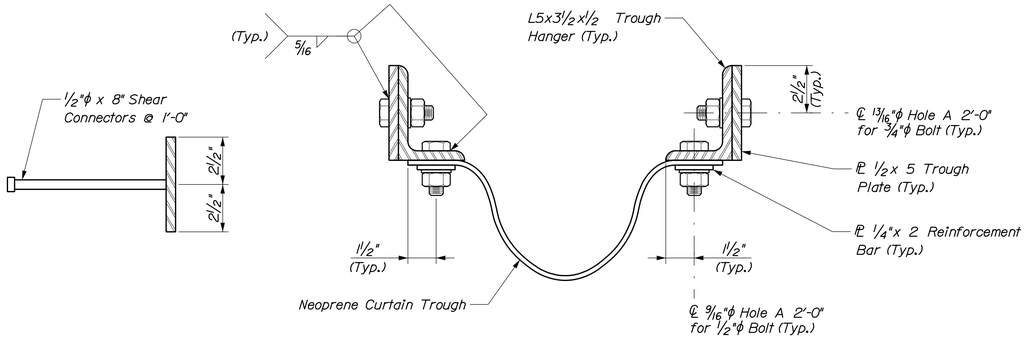
Filename: 101_Transverse Section - Span 6.dgn Division: Username: Date:1/28/2021



ABUTMENT 1 ELEVATION
(Looking Downstation)

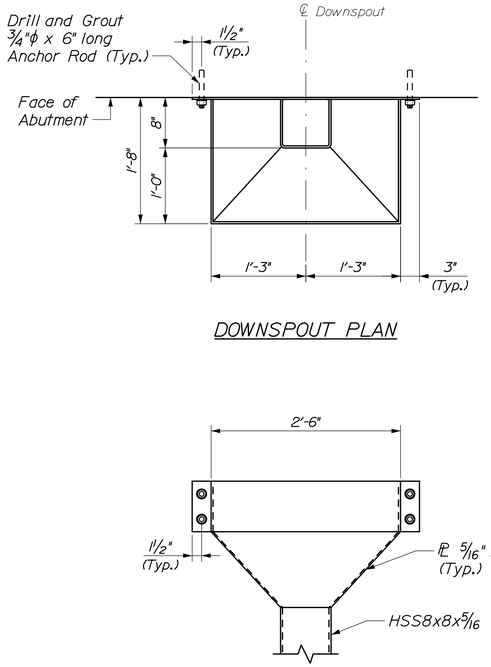


ABUTMENT 2 ELEVATION
(Looking Upstation)

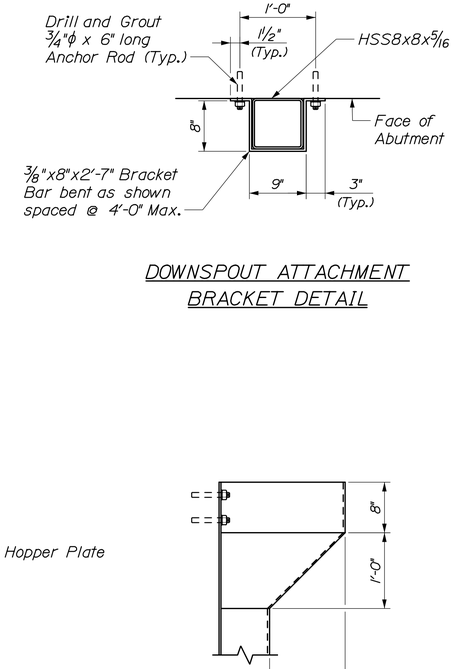


TROUGH PLATE ANCHORAGE SECTION

TROUGH SECTION DETAIL



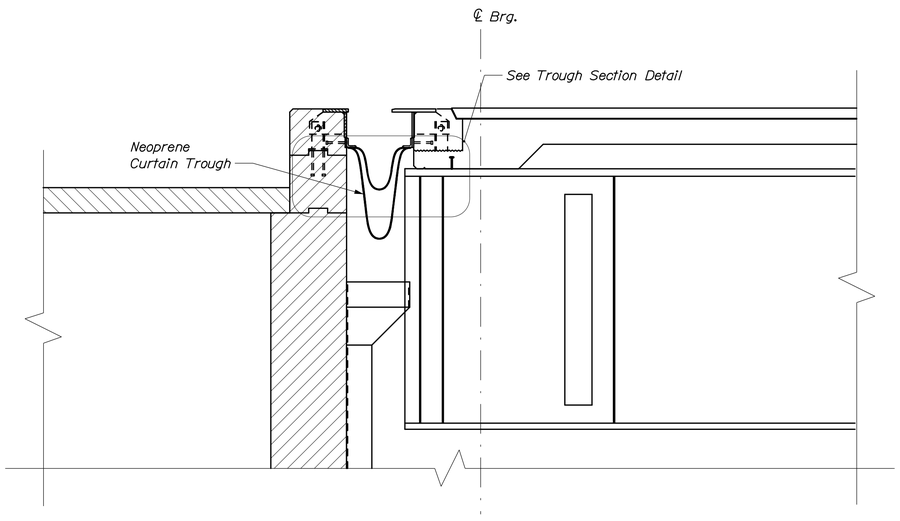
DOWNSPOUT PLAN



DOWNSPOUT ATTACHMENT BRACKET DETAIL

DOWNSPOUT ELEVATION

DOWNSPOUT SIDE ELEVATION



ABUTMENT SECTION

DOWNSPOUT NOTES:

1. The exact position of the downspouts shall be determined in the field and shall be coordinated with Curtain Trough Details.

2. All plates and bars shall conform to AASHTO M270 Grade 36 and shall be galvanized in accordance with AASHTO M111 (ASTM 123) after fabrication.

3. Brackets shall be galvanized in accordance with AASHTO M111 (ASTM 123) after fabrication.

4. All rods and related hardware shall be ASTM A307 and shall be galvanized in accordance with ASTM A153 (AASHTO M232).

5. At Contractor's option, alternate downspout details and locations may be submitted to the Resident for approval.

6. Any place where the galvanizing has been removed from the downspout either by cutting, burning, welding, placing, or any other means shall be repaired to the requirements of ASTM A780 and Annexes A1, A2, or A3.

7. Fabric Troughs to overlap a minimum of 6 inches at the crown.

8. Trough shall maintain clearance of 2" from utility blockout when bridge is in fully expanded condition.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130
P.E. NUMBER

1/28/2021
DATE

	A. LATHE	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	J. Olund	P. Bishop	11\20
CHECKED-REVIEWED	C. Count	J. Olund	11\20
DESIGN2-DETAILED2	-	-	-
DESIGN3-DETAILED3	-	-	01/21
REVISIONS 1		Removed 4" Dia. Conduits	-
REVISIONS 2			-
REVISIONS 3			-
REVISIONS 4			-
FIELD CHANGES			-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME — EDMUNDSTON, NB

DOWNSPOUT AND TROUGH DETAILS

SHEET NUMBER
130
OF 160

Filename: 130_Downspout and Trough Details.dgn Division: Username: Date:1/28/2021

Username:

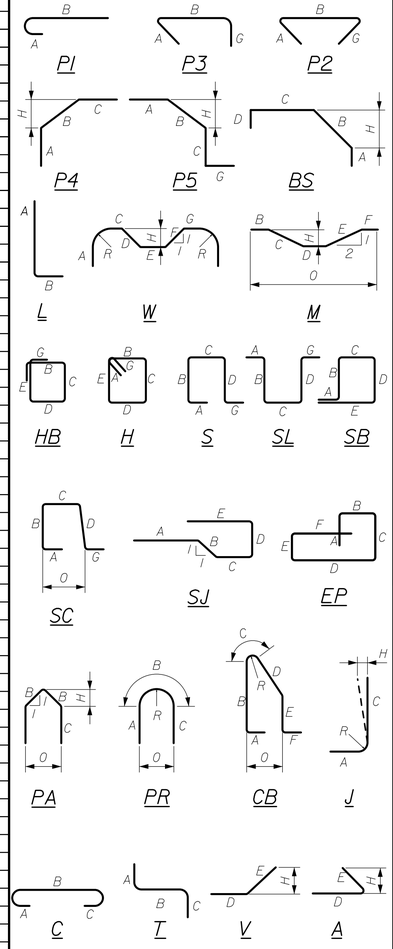
Date:1/28/2021

Division:

Filename: 133_Reinforcement Schedule 1.dgn

STRAIGHT BARS				BENT BARS														
MARK	QTY.	LENGTH	LOCATION	MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	F	G	H	K	O	R	LOCATION
ABUTMENT 1 AND WINGWALLS																			
A501ss	14	29'-8"	Bridge Seat, Horizontal	A551ss	168	13'-0"	BS	2'-0"	7'-4"	1'-8"	2'-0"				1'-1"				Bridge Seat, Top
A502ss	1	22'-5"	Bridge Seat, Horizontal	A552ss	16	12'-6"	BS	2'-0"	6'-10"	1'-8"	2'-0"				1'-1"				Bridge Seat, Left Side
A503ss	1	23'-7"	Bridge Seat, Horizontal	A553ss	162	12'-1"	L	1'-7"	10'-6"										Backwall, Vertical, F.F.
A504ss	1	24'-9"	Bridge Seat, Horizontal	A554ss	156	12'-4"	S	0'-0"	5'-7"	1'-2"	5'-7"			0'-0"					Backwall, Top
A505ss	1	25'-11"	Bridge Seat, Horizontal	A555ss	9	12'-6"	S	0'-0"	5'-7"	1'-4"	5'-7"			0'-0"					Backwall
A506ss	1	27'-1"	Bridge Seat, Horizontal	A556	46	4'-10"	P4	2'-0"	0'-10"	2'-0"					0'-7"				Approach Slab Dowel
A507ss	1	26'-7"	Bridge Seat, Horizontal	A557ss	2	14'-11"	S	0'-0"	2'-0"	10'-11"	2'-0"			0'-0"					Backwall, Sidewalk
A508ss	1	26'-0"	Bridge Seat, Horizontal	A558ss	28	3'-7"	V				2'-6"	1'-1"			0'-10"				Backwall, Corners
A509ss	79	10'-6"	Backwall, Vertical, N.F.	A559ss	14	8'-3"	V				2'-6"	5'-9"			4'-0"				Backwall, Corners
A510ss	20	10'-11"	Bacvkwall, Vertical, Corners	A560ss	14	9'-8"	L	2'-6"	7'-2"										Backwall, Corners
A511ss	52	29'-8"	Backwall, Horizontal	A561ss	4	15'-11"	CB	0'-0"	6'-4"	0'-5"	4'-1"	5'-1"	0'-0"			4'-2"	0'-3"		Pedestals, G4
A512ss	26	19'-9"	Backwall, Horizontal	A562ss	8	16'-11"	CB	0'-0"	7'-1"	0'-5"	4'-5"	5'-0"	0'-0"			4'-2"	0'-3"		Pedestals, G2 and G3
A513ss	157	14'-0"	Wingwall, Upper Section, Vertical	A563ss	4	21'-9"	CB	0'-0"	10'-0"	0'-6"	6'-2"	5'-1"	0'-0"			4'-2"	0'-3"		Pedestals, GI
A514ss	60	13'-5"	Wingwall, Upper Section, Vertical	A564ss	6	19'-8"	HB	0'-6"	7'-2"	2'-2"	7'-2"	2'-2"		0'-6"					OSS Pedestal
A515ss	30	13'-2"	Wingwall, Upper Section, Vertical	A565ss	16	10'-2"	S	0'-0"	3'-10"	2'-6"	3'-10"			0'-0"					OSS Pedestal
A516ss	30	11'-7"	Wingwall, Upper Section, Vertical	A566ss	6	15'-2"	S	0'-0"	3'-10"	7'-6"	3'-10"			0'-0"					OSS Pedestal
A517ss	24	10'-0"	Wingwall, Upper Section, Vertical	A567	128	9'-4"	S	0'-0"	0'-10"	7'-8"	0'-10"			0'-0"					SE Wingwall Step
A518ss	23	8'-10"	Wingwall, Upper Section, Vertical	A568	132	8'-12"	S	0'-0"	0'-10"	7'-4"	0'-10"			0'-0"					SW Wingwall Step
A519ss	35	14'-3"	Wingwall, Upper Section, Vertical	A569	70	7'-9"	S	0'-0"	0'-10"	6'-1"	0'-10"			0'-0"					SW Wingwall Step
A520ss	34	11'-2"	Wingwall, Upper Section, Vertical	A570ss	301	6'-10"	S	0'-0"	2'-9"	1'-4"	2'-9"			0'-0"					Wingwall Tops
A521ss	31	15'-3"	Wingwall, Upper Section, Vertical	A571ss	5	19'-11"	V				0'-10"	19'-1"			3'-2"				Wingwall, Upper Section, Horiz.
A522ss	30	12'-7"	Wingwall, Upper Section, Vertical	A572ss	2	23'-2"	V					22'-3"	0'-11"		0'-4"				Wingwall, Upper Section, Horiz.
A523ss	29	26'-6"	Wingwall, Upper Section, Horiz.	A573ss	16	15'-6"	S	0'-0"	4'-11"	4'-2"	6'-5"			0'-0"					Pedestals
A524ss	29	24'-8"	Wingwall, Upper Section, Horiz.																
A525ss	29	19'-8"	Wingwall, Upper Section, Horiz.	A651	164	5'-6"	S	0'-0"	1'-0"	3'-6"	1'-0"			0'-0"					SW Wingwall, Perimeter
A526ss	16	19'-8"	Wingwall, Upper Section, Horiz.	A652ss	24	12'-7"	S	0'-0"	3'-10"	4'-11"	3'-10"			0'-0"					Pedestals, G4
A527ss	2	13'-9"	Wingwall, Upper Section, Horiz.	A653ss	1	12'-5"	S	0'-0"	3'-10"	4'-9"	3'-10"			0'-0"					Pedestals, G2 and G3
A528ss	2	7'-10"	Wingwall, Upper Section, Horiz.	A654ss	1	12'-8"	S	0'-0"	3'-10"	5'-0"	3'-10"			0'-0"					Pedestal, GI
A529ss	2	2'-0"	Wingwall, Upper Section, Horiz.	A655ss	1	11'-3"	S	0'-0"	3'-10"	3'-7"	3'-10"			0'-0"					Pedestals, G2 - G4
A530ss	10	14'-8"	Wingwall, Upper Section, Horiz.	A656ss	1	14'-9"	S	0'-0"	3'-10"	7'-1"	3'-10"			0'-0"					Pedestal, GI
A531ss	2	13'-3"	Wingwall, Upper Section, Horiz.	A657ss	1	13'-12"	S	0'-0"	3'-10"	6'-4"	3'-10"			0'-0"					Pedestal, GI
A532ss	2	7'-8"	Wingwall, Upper Section, Horiz.	A658ss	1	13'-3"	S	0'-0"	3'-10"	5'-7"	3'-10"			0'-0"					Pedestal, GI
A533ss	2	2'-0"	Wingwall, Upper Section, Horiz.	A659ss	1	12'-6"	S	0'-0"	3'-10"	4'-10"	3'-10"			0'-0"					Pedestal, GI
A534ss	5	14'-10"	Wingwall, Upper Section, Horiz.	A660ss	1	11'-9"	S	0'-0"	3'-10"	4'-1"	3'-10"			0'-0"					Pedestal, GI
A535ss	14	22'-6"	Wingwall, Upper Section, Horiz.	A661ss	1	10'-12"	S	0'-0"	3'-10"	3'-4"	3'-10"			0'-0"					Pedestal, GI
A536ss	2	18'-9"	Wingwall, Upper Section, Horiz.	A662ss	1	10'-3"	S	0'-0"	3'-10"	2'-7"	3'-10"			0'-0"					Pedestal, GI
A537ss	2	15'-1"	Wingwall, Upper Section, Horiz.	A663ss	1	9'-6"	S	0'-0"	3'-10"	1'-10"	3'-10"			0'-0"					Pedestal, GI
A538ss	2	11'-4"	Wingwall, Upper Section, Horiz.	A664ss	52	11'-8"	S	0'-0"	3'-10"	4'-0"	3'-10"			0'-0"					Pedestals
A539ss	2	7'-8"	Wingwall, Upper Section, Horiz.	A665ss	4	12'-8"	S	0'-0"	3'-10"	5'-0"	3'-10"			0'-0"					Pedestals
A540ss	2	4'-0"	Wingwall, Upper Section, Horiz.																
A541ss	16	19'-8"	Wingwall, Upper Section, Horiz.	A751	414	6'-10"	S	0'-0"	1'-2"	4'-6"	1'-2"			0'-0"					Abutment Footing, Perimeter
A542ss	2	18'-10"	Wingwall, Upper Section, Horiz.	A752	10	8'-0"	V				4'-0"	4'-0"			2'-4"				Abutment Footing Corners
A543ss	2	15'-5"	Wingwall, Upper Section, Horiz.	A753	108	8'-8"	L	1'-2"	7'-6"										Abutment Stemwall Dowel, N.F.
A544ss	2	12'-0"	Wingwall, Upper Section, Horiz.	A754	27	13'-8"	S	0'-0"	2'-6"	8'-8"	2'-6"			0'-0"					Abutment Stemwall, Side Face
A545ss	2	8'-8"	Wingwall, Upper Section, Horiz.	A755	28	6'-4"	S	0'-0"	2'-6"	1'-4"	2'-6"			0'-0"					Stemwall, Side, Corner
A546ss	2	5'-3"	Wingwall, Upper Section, Horiz.	A756	27	20'-10"	S	0'-0"	5'-3"	7'-11"	7'-8"			0'-0"					Stemwall, Side, Corner
A547ss	2	20'-4"	Wingwall, Upper Section, Horiz.	A757	55	7'-8"	V				3'-10"	3'-10"			2'-2"				Stemwall, Side, Corner
A548ss	24	14'-0"	Backwall, Utility Blockouts	A758	97	8'-5"	L	1'-2"	7'-3"										Wingwall Footing Dowel, N.F.
				A759	171	7'-8"	L	1'-2"	6'-6"										SW Footing Dowel, N.F. & F.F.
A601	58	55'-0"	SW Wingwall Footing, Top & Bot.																
				A1051	170	11'-8"	L	1'-10"	9'-10"										Abutment Stem Dowel, F.F.
A701	66	52'-9"	S.E. Wingwall Footing, Top & Bot.	A1052	202	11'-3"	L	1'-10"	9'-5"										Wingwall Stem Dowel, F.F.
A702	128	40'-5"	Abut. Footing, Top and Bot.																
A703	132	35'-9"	SW Wingwall Footing, Top & Bot.																
A704	228	18'-3"	SW Wingwall Footing, Top & Bot.																
A705	6	28'-6"	Wingwall Footing, Ends																
A706	108	25'-9"	Abutment Stemwall, N.F.																
A707	110	29'-8"	Abutment Stemwall, Horizontal																
A708	55	21'-3"	Abutment Stemwall, Horizontal																
A709	171	12'-11"	SW Wingwall Vertical, F.F.																
A710	82	26'-11"	Wingwall, Vertical, N.F.																
A711	25	19'-10"	Wingwall, Vertical, N.F.																
A712	62	26'-6"	Wingwall Horizontal, E.F.																
A713	62	24'-8"	Wingwall Horizontal, E.F.																
A714	114	19'-8"	Wingwall Horizontal, E.F.																
A715	62	22'-6"	Wingwall Horizontal, E.F.																
A716	33	14'-8"	Wingwall Horizontal, E.F.																
A1001	170	26'-11"	Abutment Stemwall, F.F.																
A1002	150	26'-11"	Wingwall Vertical, F.F.																
A1003	40	19'-10"	SE Wingwall Vertical, F.F.																
A1101	484	28'-6"	Wingwall Footings																
A1102	312	27'-6"	Abutment Footing																

TYPE - BENDING DIAGRAMS



All dimensions are out-to-out of bar.

Bending details and hooks shall conform to the recommendations of the current revision of ACI Standard 315 and ACI Standard 318.

Reinforcing Bar: ASTM A615/A615M, Grade 60
ASTM A955, GRADE 75
CSA S807-10, AC1 440.1r-15

GENERAL NOTES

1. The first two digits following the letter(s) of the mark indicate the size of the bar:

   Mark "A502" = bar size #5
   Mark "P805" = bar size #8
   Mark "S650" = bar size #6
   Mark "S650ss" = bar size #6 Stainless Steel
   Mark "S600H" = bar size #6 Grade 75

2. Each crank bar, Type B, may be replaced by two (2) straight bars (one top and one bottom) of the same bar size as the crank bar. Payment in either case shall be based on crank bars as schedule on the plans.

3. Bar marks ending with 'H' indicate plain Grade 75. Bar marks ending with 'ss' indicate stainless steel. All other bars are plain (uncoated) Grade 60.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130

P.E. NUMBER

1/28/2021

DATE

	BY	DATE
PROJ. MANAGER	A. LATHE	
DESIGN-DETAILED	T. Poulin	11\20
CHECKED-REVIEWED	P. Bishop	11\20
DESIGN2-DETAILED2	K. Segal	11\20
DESIGN3-DETAILED3	J. Olund	-
REVISIONS 1	Blockout Rebar Change	01/21
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

REINFORCEMENT SCHEDULE 1

SHEET NUMBER

133

OF 160

1

Date:1/28/2021

Username:

Division:

Filename: 134_Reinforcement Schedule 2.dgn

ABUTMENT 2 AND WINGWALLS

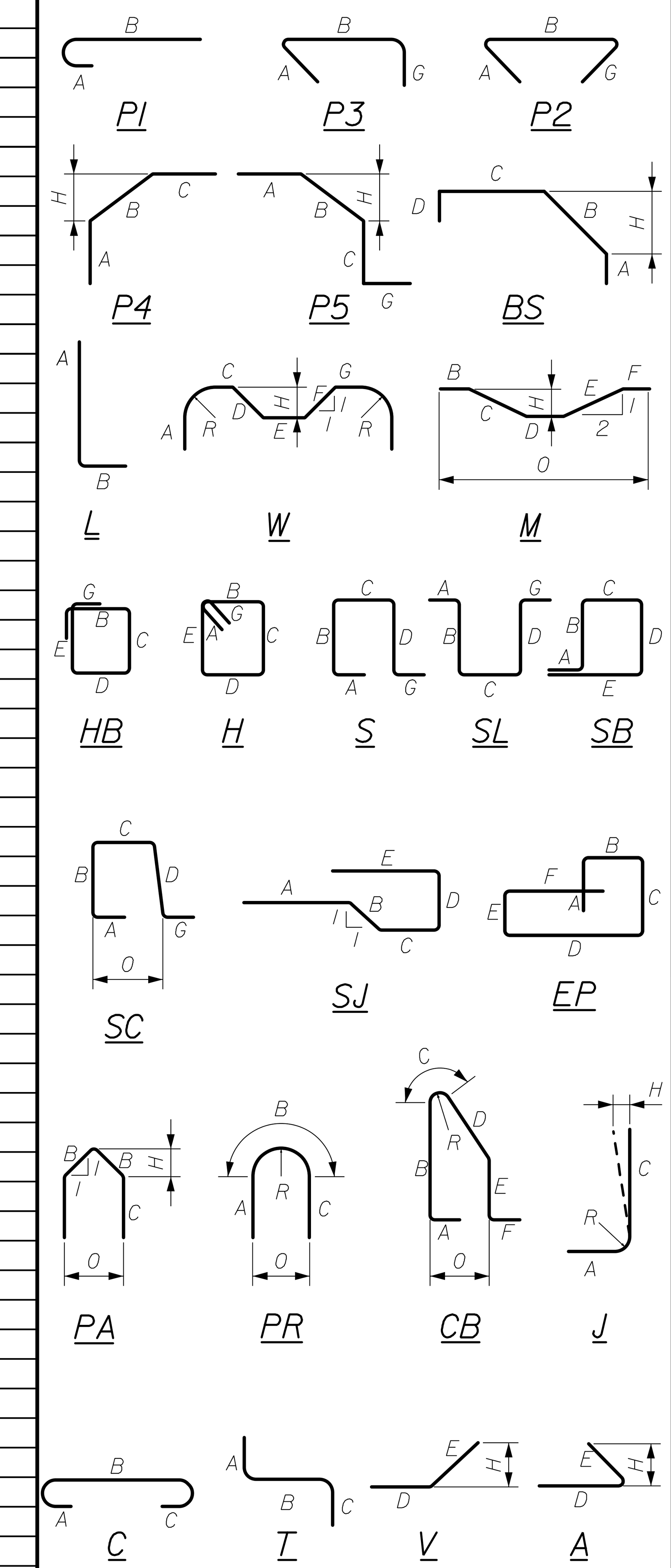
STRAIGHT BARS

MARK	QTY.	LENGTH	LOCATION
B501ss	1	22'-6"	Stage II - Abutment Seat Horiz.
B502ss	1	21'-9"	Stage II - Abutment Seat Horiz.
B503ss	1	21'-1"	Stage II - Abutment Seat Horiz.
B504ss	1	20'-4"	Stage II - Abutment Seat Horiz.
B505ss	1	19'-8"	Stage II - Abutment Seat Horiz.
B506ss	1	19'-0"	Stage II - Abutment Seat Horiz.
B507ss	1	18'-3"	Stage II - Abutment Seat Horiz.
B508ss	1	17'-7"	Stage II - Abutment Seat Horiz.
B509ss	1	16'-10"	Stage II - Abutment Seat Horiz.
B510ss	1	16'-2"	Stage II - Abutment Seat Horiz.
B511ss	1	15'-5"	Stage II - Abutment Seat Horiz.
B512ss	1	14'-9"	Stage II - Abutment Seat Horiz.
B513ss	46	5'-4"	Stage I - Abutment Backwall Vert.
B514ss	10	43'-11"	Stage I - Abutment Backwall Horiz. (F.F.)
B515ss	10	44'-1"	Stage I - Abutment Backwall Horiz. (N.F.)
B516ss	18	7'-0"	Stage I - Abutment Backwall Vert. (N.F.)
B517ss	19	7'-7"	Stage I - Abutment Backwall Vert. (N.F.)
B518ss	16	8'-3"	Stage I - Abutment Backwall Vert. (N.F.)
B519ss	20	49'-5"	Stage I - Abutment Backwall Horiz. (E.F.)
B520ss	2	32'-5"	Stage I - Abutment Backwall Horiz. (E.F.)
B521ss	2	14'-2"	Stage I - Abutment Backwall Horiz. (E.F.)
B522ss	2	34'-11"	Stage I - Abutment Backwall Horiz. (E.F.)
B523ss	2	16'-8"	Stage I - Abutment Backwall Horiz. (E.F.)
B524ss	21	8'-11"	Stage II - Abutment Backwall Vert. (N.F.)
B525ss	8	21'-8"	Stage II - Abutment Backwall Horiz. (F.F.)
B526ss	8	19'-3"	Stage II - Abutment Backwall Horiz. (N.F.)
B527ss	6	21'-8"	Stage II - Abutment Backwall Horiz. (E.F.)
B528ss	8	6'-0"	Abutment Backwall - Conduit Blockout
BW501	2	22'-4"	NW Wingwall - Lower Stem Horiz.
BW502ss	4	5'-10"	NW Wingwall - Upper Stem Vert. (E.F.)
BW503ss	10	5'-9"	NW Wingwall - Upper Stem Vert. (E.F.)
BW504ss	12	5'-8"	NW Wingwall - Upper Stem Vert. (E.F.)
BW505ss	12	5'-7"	NW Wingwall - Upper Stem Vert. (E.F.)
BW506ss	10	5'-6"	NW Wingwall - Upper Stem Vert. (E.F.)
BW507ss	12	5'-5"	NW Wingwall - Upper Stem Vert. (E.F.)
BW508ss	10	5'-4"	NW Wingwall - Upper Stem Vert. (E.F.)
BW509ss	12	5'-3"	NW Wingwall - Upper Stem Vert. (E.F.)
BW510ss	10	5'-2"	NW Wingwall - Upper Stem Vert. (E.F.)
BW511ss	17	22'-4"	NW Wingwall - Upper Stem Horiz. (E.F.)
BW512	2	17'-2"	NW Wingwall - Lower Stem Horiz. (E.F.)
BW513ss	8	8'-8"	NW Wingwall - Upper Stem Vert. (E.F.)
BW514ss	12	8'-7"	NW Wingwall - Upper Stem Vert. (E.F.)
BW515ss	10	8'-6"	NW Wingwall - Upper Stem Vert. (E.F.)
BW516ss	12	8'-5"	NW Wingwall - Upper Stem Vert. (E.F.)
BW517ss	10	8'-4"	NW Wingwall - Upper Stem Vert. (E.F.)
BW518ss	12	8'-3"	NW Wingwall - Upper Stem Vert. (E.F.)
BW519ss	8	8'-2"	NW Wingwall - Upper Stem Vert. (E.F.)
BW520ss	23	17'-2"	NW Wingwall - Upper Stem Horiz. (E.F.)
BW521	2	12'-1"	NE Wingwall - Lower Stem Horiz.
BW522ss	16	9'-10"	NE Wingwall - Upper Stem Vert. (E.F.)
BW523ss	20	9'-9"	NE Wingwall - Upper Stem Vert. (E.F.)
BW524ss	16	9'-8"	NE Wingwall - Upper Stem Vert. (E.F.)
BW525ss	22	12'-1"	NE Wingwall - Upper Stem Horiz. (E.F.)
BW526	2	25'-8"	NE Wingwall - Lower Stem Horiz.
BW527ss	2	8'-6"	NE Wingwall - Upper Stem Vert. (E.F.)
BW528ss	18	8'-5"	NE Wingwall - Upper Stem Vert. (E.F.)
BW529ss	18	8'-4"	NE Wingwall - Upper Stem Vert. (E.F.)
BW530ss	18	8'-3"	NE Wingwall - Upper Stem Vert. (E.F.)
BW531ss	18	8'-2"	NE Wingwall - Upper Stem Vert. (E.F.)
BW532ss	20	8'-1"	NE Wingwall - Upper Stem Vert. (E.F.)
BW533ss	12	8'-0"	NE Wingwall - Upper Stem Vert. (E.F.)
BW534ss	20	25'-8"	NE Wingwall - Upper Stem Horiz.
BW535	2	23'-6"	NE Wingwall - Lower Stem Horiz.
BW536ss	16	8'-0"	NE Wingwall - Upper Stem Vert. (E.F.)
BW537ss	48	7'-11"	NE Wingwall - Upper Stem Vert. (E.F.)
BW538ss	32	7'-10"	NE Wingwall - Upper Stem Vert. (E.F.)
BW539ss	20	23'-6"	NE Wingwall - Upper Stem Horiz.
B601	6	22'-11"	NW Wingwall Footing (E.F.)
B602	6	7'-6"	NW Wingwall Footing (E.F.)
B603	30	50'-2"	NE Wingwall Footing (E.F.)
B604	56	11'-6"	NE Wingwall Footing (E.F.)
B605	148	8'-9"	NE & NW Wingwall Stem Vert. (E.F.)
B606ss	418	5'-2"	Wingwall Stem Dowels (E.F.)
B607ss	10	22'-4"	NW Wingwall Barrier Long. (E.F.)
B608	27	17'-6"	NW Wingwall Lower Stem Vert. (N.F.)
B609ss	10	17'-2"	NW Wingwall Barrier Long. (E.F.)
B610	20	13'-10"	NE Wingwall Lower Stem Vert. (N.F.)
B611ss	12	12'-1"	NE Wingwall Barrier Long. (E.F.)
B612ss	12	25'-8"	NE Wingwall Barrier Long. (E.F.)
B613ss	6	23'-6"	NE Wingwall Barrier Long. (E.F.)
B614ss	2	21'-11"	NE Wingwall Barrier Long. (E.F.)
B615ss	2	20'-10"	NE Wingwall Barrier Long. (E.F.)

BENT BARS

MARK	QTY.	LENGTH	TYPE	A	B	C	D	E	F	G	H	K	O	R	LOCATION
B550ss	1	45'-8"	S	0'-0"	0'-10"	44'-0"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B551ss	2	45'-9"	S	0'-0"	0'-10"	44'-1"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B552ss	1	45'-10"	S	0'-0"	0'-10"	44'-2"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B553ss	2	45'-11"	S	0'-0"	0'-10"	44'-3"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B554ss	1	46'-0"	S	0'-0"	0'-10"	44'-4"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B555ss	3	46'-1"	S	0'-0"	0'-10"	44'-5"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B556ss	1	46'-3"	S	0'-0"	0'-10"	44'-7"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B557ss	1	46'-4"	S	0'-0"	0'-10"	44'-8"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B558ss	12	18'-1"	S	0'-0"	0'-10"	16'-5"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B559ss	12	19'-5"	S	0'-0"	0'-10"	17'-9"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B560ss	12	15'-10"	S	0'-0"	0'-10"	14'-2"	0'-10"			0'-0"					Stage I - Abutment Seat Trans.
B561ss	111	12'-10"	BS	2'-0"	7'-1"	1'-9"	2'-0"				1'-1"				Stage I - Abutment Seat (Top.)
B562ss	2	12'-11"	BS	2'-0"	7'-2"	1'-9"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B563ss	1	13'-0"	BS	2'-0"	7'-3"	1'-9"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B564ss	1	13'-1"	BS	2'-0"	7'-4"	1'-9"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B565ss	1	13'-2"	BS	2'-0"	7'-5"	1'-9"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B566ss	1	13'-4"	BS	2'-0"	7'-6"	1'-10"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B567ss	1	13'-5"	BS	2'-0"	7'-7"	1'-10"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B568ss	1	13'-6"	BS	2'-0"	7'-8"	1'-10"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B569ss	1	13'-7"	BS	2'-0"	7'-9"	1'-10"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B570ss	1	13'-10"	BS	2'-0"	7'-11"	1'-11"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B571ss	1	13'-11"	BS	2'-0"	8'-0"	1'-11"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B572ss	1	14'-1"	BS	2'-0"	8'-2"	1'-11"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B573ss	1	14'-3"	BS	2'-0"	8'-3"	2'-0"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B574ss	1	14'-5"	BS	2'-0"	8'-5"	2'-0"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B575ss	1	14'-8"	BS	2'-0"	8'-7"	2'-1"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B576ss	1	14'-10"	BS	2'-0"	8'-9"	2'-1"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B577ss	1	15'-1"	BS	2'-0"	8'-11"	2'-2"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B578ss	1	15'-3"	BS	2'-0"	9'-1"	2'-2"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B579ss	1	15'-6"	BS	2'-0"	9'-3"	2'-3"	2'-0"				1'-1"				Stage II - Abutment Seat (Top.)
B580ss	3	22'-10"	S	0'-0"	10'-11"	1'-0"	10'-11"			0'-0"					Stage I - Abutment Backwall Vert. (West Face)
B581ss	4	3'-9"	A				2'-0"	1'-9"			1'-9"				Stage I - Abutment Backwall Return Horiz. (F.F.)
B582ss	11	5'-2"	A				2'-0"	3'-2"			3'-2"				Stage I - Abutment Backwall Return Horiz. (N.F.)
B583ss	7	4'-3"	A				2'-0"	2'-3"			2'-3"				Stage I - Abutment Backwall Return Horiz. (F.F.)
B584ss	87	6'-4"	L	5'-4"	1'-0"										Stage I - Abutment Backwall Vert. (F.F.)
B585ss	87	16'-3"	BS	7'-8"	1'-0"	0'-0"	7'-7"				0'-1"				Stage I - Abutment Backwall Vert.
B586ss	2	42'-6"	P4	32'-3"	10'-3"	0'-0"					0'-7"				Stage I - Abutment Backwall Horiz. (E.F.)
B587ss	34	7'-10"	L	7'-0"	0'-10"										Stage I - Abutment Backwall Vert. (F.F.)
B588ss	37	8'-5"	L	7'-7"	0'-10"										Stage I - Abutment Backwall Vert. (F.F.)
B589ss	30	9'-1"	L	8'-3"	0'-10"										Stage I - Abutment Backwall Vert. (F.F.)
B590ss	100	15'-5"	BS	7'-3"	1'-0"	0'-0"	7'-2"				0'-1"				Stage I - Abutment Backwall Vert.
B591ss	45	9'-11"	L	8'-11"	1'-0"										Stage II - Abutment Backwall Horiz. (E.F.)
B592ss	44	12'-1"	BS	5'-7"	1'-0"	0'-0"	5'-6"				0'-1"				Stage II - Abutment Backwall Vert.
B593ss	2	12'-2"	S	0'-0"	0'-10"	10'-6"	0'-10"			0'-0"					Stage II - Abutment Backwall Horiz. Top (E.F.)
B594ss	2	10'-8"	S	0'-0"	0'-10"	9'-0"	0'-10"			0'-0"					Stage II - Abutment Backwall Horiz. Top (E.F.)
B595ss	6	25'-2"	S	0'-0"	12'-1"	1'-0"	12'-1"			0'-0"					Stage II - Abutment Backwall Vert.
B596ss	8	3'-8"	V				2'-0"	1'-8"			1'-2"				Stage II - Abutment Backwall Vert. (F.F.)
B597ss	12	6'-1"	L	4'-1"	2'-0"										Stage II - Abutment Backwall Horiz. (N.F.)
B598ss	4	4'-5"	V				2'-0"	2'-5"			1'-8"				Stage II - Abutment Backwall Horiz. (F.F.)
B599	76	4'-10"	P4	2'-0"	0'-10"	2'-0"					0'-7"				Abutment Backwall - Approach Slab
BP551ss	12	13'-9"	S	0'-0"	6'-1"	3'-11"	3'-9"			0'-0"					Pedestal Ties - G1 thru G4 (F.F.)
BP552ss	9	12'-7"	S	0'-0"	4'-10"	3'-11"	3'-10"			0'-0"					Pedestal Ties - SG2 thru SG4 (F.F.)
BP553ss	12	15'-10"	BS	3'-9"	6'-0"	0'-0"	6'-1"				4'-5"				Pedestal Ties - G1 thru G4 (N.F.)
BP554ss	9	13'-2"	BS	3'-10"	4'-6"	0'-0"	4'-10"				2'-1"				Pedestal Ties - SG2 thru SG4 (N.F.)
BW551	209	4'-6"	S	0'-0"	0'-10"	2'-10"	0'-10"			0'-0"					Wingwall Lower Stem Top
BW552ss	16	2'-10"	S	0'-0"	0'-10"	1'-2"	0'-10"			0'-0"					Wingwall Upper Stem U-Bar (End Face)
BW553ss	209	5'-11"	S	0'-0"	2'-5"	1'-1"	2'-5"			0'-0"					Wingwall Upper Stem Top
BW554ss	9	2'-9"	S	0'-0"	0'-10"	1'-1"	0'-10"			0'-0"					Wingwall Barriers End Face
BW555ss	62	9'-5"	S	0'-0"	4'-2"	1'-1"	4'-2"			0'-0"					Northwest Wingwall - Barrier Top
BW556ss	97	10'-9"	S	0'-0"	4'-10"	1'-1"	4'-10"			0'-0"					Northeast Wingwall - Barrier Top
B651	35	7'-10"	L	6'-10"	1'-0"										NW Wingwall Stem Dowel (F.F.)
B652	24	7'-1"	L	6'-1"	1'-0"										NW Wingwall Stem Dowel (N.F.)
B653	18	5'-6"	S	0'-0"	1'-0"	3'-6"	1'-0"			0'-0"					NW Wingwall Footing (North & South Face)
B654	47	8'-4"	L	7'-4"	1'-0"										NE & NW Wingwall Stem Dowels (N.F.)
B655	10	6'-6"	S	0'-0"	1'-0"	4'-6"	1'-0"			0'-0"					NW Wingwall Footing - End Face
B656	52	6'-1"	L	5'-1"	1'-0"										NE Wingwall Stem Dowels (N.F.)
B657	77	6'-10"	L	5'-10"	1'-0"										NE Wingwall Stem Dowels (F.F.)
B658	65	4'-6"	S	0'-0"	1'-0"	2'-6"	1'-0"			0'-0"					NE Wingwall Footing (End Face)
B659ss	2	23'-10"	V				21'-0"	2'-10"			1'-5"				NE Wingwall Barrier Long. (Top)
B660ss	36	11'-5"	S	0'-6"	2'-10"	4'-9"	2'-10"			0'-6"					Pedestals G1 thru G4 (F.F.)
B661ss	4	13'-6"	S	0'-6"	2'-10"	6'-10"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B662ss	4	12'-11"	S	0'-6"	2'-10"	6'-3"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B663ss	4	12'-5"	S	0'-6"	2'-10"	5'-9"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B664ss	4	11'-10"	S	0'-6"	2'-10"	5'-2"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B665ss	4	11'-3"	S	0'-6"	2'-10"	4'-7"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B666ss	4	10'-9"	S	0'-6"	2'-10"	4'-1"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B667ss	4	10'-2"	S	0'-6"	2'-10"	3'-6"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B668ss	4	9'-7"	S	0'-6"	2'-10"	2'-11"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B669ss	4	9'-1"	S	0'-6"	2'-10"	2'-5"	2'-10"			0'-6"					Pedestals G1 thru G4 (N.F.)
B670ss	27	11'-9"	S	0'-6"	3'-0"	4'-9"	3'-0"			0'-6"					Pedestals SG2 thru SG4 (F.F.)
B671ss	3	11'-9"	S	0'-6"	3'-0"	4'-9"	3'-0"			0'-6"					Pedestals SG2 thru SG4 (N.F.)
B672ss	3	11'-6"	S	0'-6"	3'-0"	4'-6"	3'-0"			0'-6"					Pedestals SG2 thru SG4 (N.F.)

TYPE - BENDING DIAGRAMS



All dimensions are out-to-out of bar.

Bending details and hooks shall conform to the recommendations of the current revision of ACI Standard 315 and ACI Standard 318.

Reinforcing Bar: ASTM A615/A615M, Grade 60
ASTM A955, GRADE 75
CSA S807-10, AC1 440.1r-15

GENERAL NOTES

1. The first two digits following the letter(s) of the mark indicate the size of the bar:

   Mark "A502" = bar size #5
   Mark "P805" = bar size #8
   Mark "S650" = bar size #6
   Mark "S650ss" = bar size #6 Stainless Steel
   Mark "S600H" = bar size #6 Grade 75

2. Each crank bar, Type B, may be replaced by two (2) straight bars (one top and one bottom) of the same bar size as the crank bar. Payment in either case shall be based on crank bars as schedule on the plans.

3. Bar marks ending with "H" indicate plain Grade 75. Bar marks ending with "ss" indicate stainless steel. All other bars are plain (uncoated) Grade 60.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

BRIDGE PLANS

WIN 021736.00

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

STATE OF MAINE JOSHUA K. OLUND No. 12130 LICENSED PROFESSIONAL ENGINEER

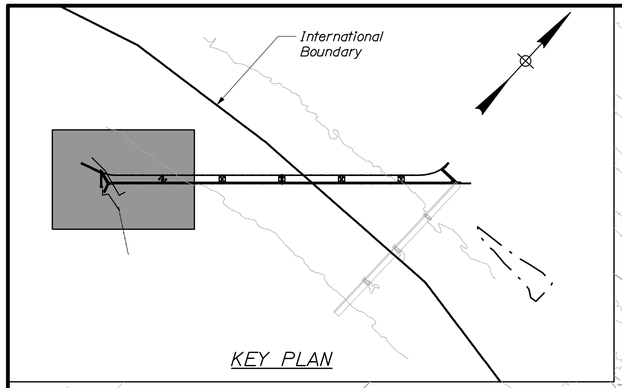
SIGNATURE
P.E. NUMBER 12130
DATE 1/28/2021

	BY	DATE
PROJ. MANAGER	A. LATHE	
DESIGN-DETAILED	T. Poulin / P. Bishop	11\20
CHECKED-REVIEWED	K. Segal / J. Olund	11\20
DESIGN2-DETAILED2	- / -	-
DESIGN3-DETAILED3	- / -	-
REVISIONS 1	Blockout Rebar Change	01/21
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

REINFORCEMENT SCHEDULE 2

SHEET NUMBER
134
OF 160



KEY PLAN

NOTES:

1. The LPOE layout shown on these Plans depicts the design intent for the LPOE. The LPOE Design-Build Contractor is responsible for final design of this facility; minor changes to the layout may occur.

ABBREVIATIONS:

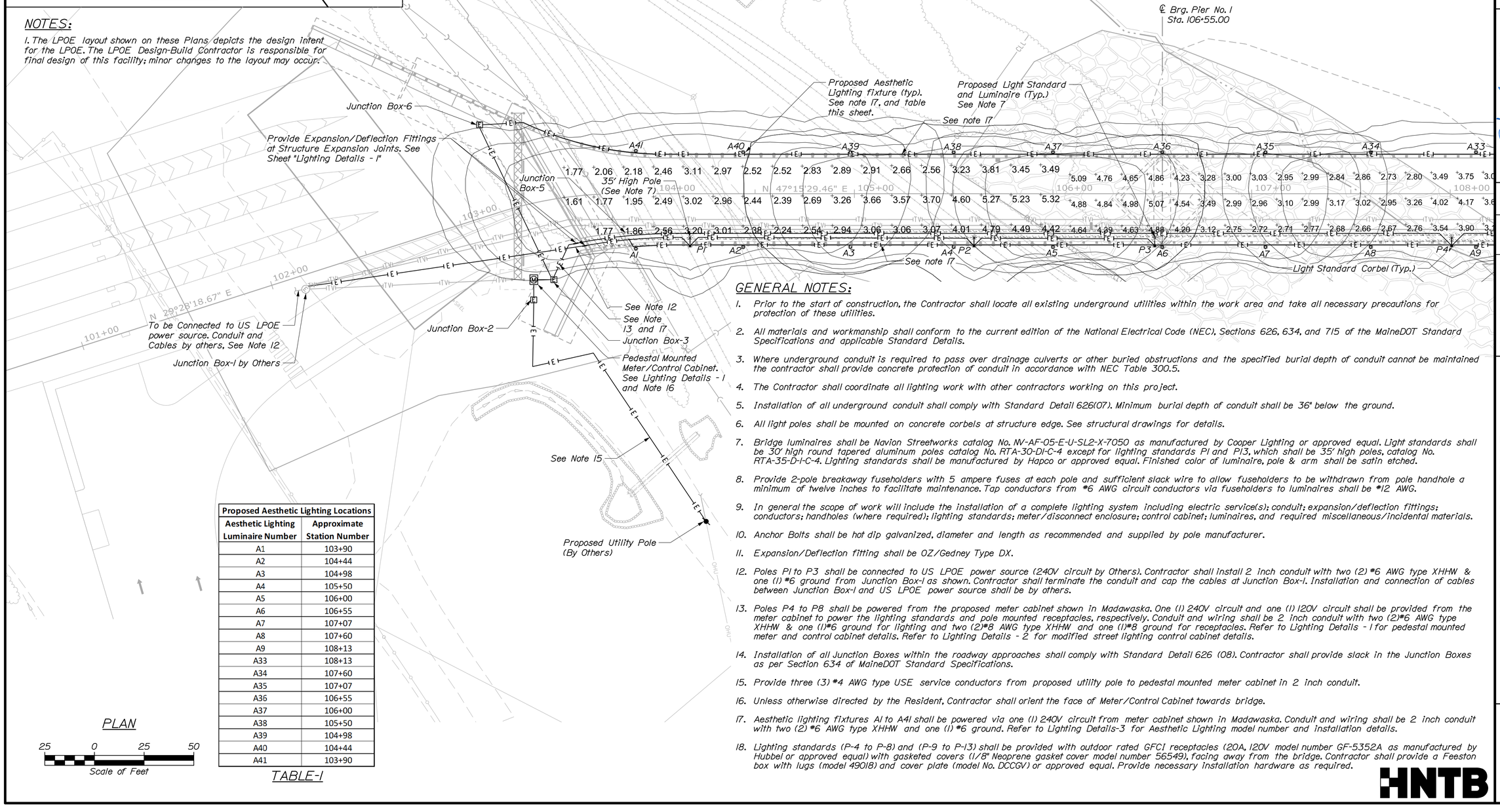
LPOE - Land Port of Entry

POE - Port of Entry

U.O.N. - Unless Otherwise Noted

LEGEND:

- Light Pole and Luminiare. (See Notes for Pole Heights)
- Electrical Conduit
- Junction Box (22"x22"x24")
- Pedestal Mounted Meter/Control Cabinet
- Expansion/Deflection Fitting
- Flag Pole
- Aesthetic Lighting Fixture



Proposed Aesthetic Lighting Locations	
Aesthetic Lighting Luminaire Number	Approximate Station Number
A1	103+90
A2	104+44
A3	104+98
A4	105+50
A5	106+00
A6	106+55
A7	107+07
A8	107+60
A9	108+13
A33	108+13
A34	107+60
A35	107+07
A36	106+55
A37	106+00
A38	105+50
A39	104+98
A40	104+44
A41	103+90

TABLE-I

PLAN

25 0 25 50

Scale of Feet

GENERAL NOTES:

1. Prior to the start of construction, the Contractor shall locate all existing underground utilities within the work area and take all necessary precautions for protection of these utilities.
2. All materials and workmanship shall conform to the current edition of the National Electrical Code (NEC), Sections 626, 634, and 715 of the MaineDOT Standard Specifications and applicable Standard Details.
3. Where underground conduit is required to pass over drainage culverts or other buried obstructions and the specified burial depth of conduit cannot be maintained the contractor shall provide concrete protection of conduit in accordance with NEC Table 300.5.
4. The Contractor shall coordinate all lighting work with other contractors working on this project.
5. Installation of all underground conduit shall comply with Standard Detail 626(07). Minimum burial depth of conduit shall be 36" below the ground.
6. All light poles shall be mounted on concrete corbels at structure edge. See structural drawings for details.
7. Bridge luminaires shall be Navion Streetworks catalog No. NV-AF-05-E-U-SL2-X-7050 as manufactured by Cooper Lighting or approved equal. Light standards shall be 30' high round tapered aluminum poles catalog No. RTA-30-DI-C-4 except for lighting standards P1 and P13, which shall be 35' high poles, catalog No. RTA-35-D-I-C-4. Lighting standards shall be manufactured by Hapco or approved equal. Finished color of luminaire, pole & arm shall be satin etched.
8. Provide 2-pole breakaway fuseholders with 5 ampere fuses at each pole and sufficient slack wire to allow fuseholders to be withdrawn from pole handhole a minimum of twelve inches to facilitate maintenance. Tap conductors from #6 AWG circuit conductors via fuseholders to luminaires shall be #12 AWG.
9. In general the scope of work will include the installation of a complete lighting system including electric service(s); conduit; expansion/deflection fittings; conductors; handholes (where required); lighting standards; meter/disconnect enclosure; control cabinet; luminaires, and required miscellaneous/incidental materials.
10. Anchor Bolts shall be hot dip galvanized, diameter and length as recommended and supplied by pole manufacturer.
11. Expansion/Deflection fitting shall be OZ/Gedney Type DX.
12. Poles P1 to P3 shall be connected to US LPOE power source (240V circuit by Others). Contractor shall install 2 inch conduit with two (2) #6 AWG type XHHW & one (1) #6 ground from Junction Box-1 as shown. Contractor shall terminate the conduit and cap the cables at Junction Box-1. Installation and connection of cables between Junction Box-1 and US LPOE power source shall be by others.
13. Poles P4 to P8 shall be powered from the proposed meter cabinet shown in Madawaska. One (1) 240V circuit and one (1) 120V circuit shall be provided from the meter cabinet to power the lighting standards and pole mounted receptacles, respectively. Conduit and wiring shall be 2 inch conduit with two (2)#6 AWG type XHHW & one (1)#6 ground for lighting and two (2)#8 AWG type XHHW and one (1)#8 ground for receptacles. Refer to Lighting Details - 1 for pedestal mounted meter and control cabinet details. Refer to Lighting Details - 2 for modified street lighting control cabinet details.
14. Installation of all Junction Boxes within the roadway approaches shall comply with Standard Detail 626 (08). Contractor shall provide slack in the Junction Boxes as per Section 634 of MaineDOT Standard Specifications.
15. Provide three (3) #4 AWG type USE service conductors from proposed utility pole to pedestal mounted meter cabinet in 2 inch conduit.
16. Unless otherwise directed by the Resident, Contractor shall orient the face of Meter/Control Cabinet towards bridge.
17. Aesthetic lighting fixtures A1 to A41 shall be powered via one (1) 240V circuit from meter cabinet shown in Madawaska. Conduit and wiring shall be 2 inch conduit with two (2) #6 AWG type XHHW and one (1) #6 ground. Refer to Lighting Details-3 for Aesthetic Lighting model number and installation details.
18. Lighting standards (P-4 to P-8) and (P-9 to P-13) shall be provided with outdoor rated GFCI receptacles (20A, 120V model number GF-5352A as manufactured by Hubbel or approved equal) with gasketed covers (1/8" Neoprene gasket cover model number 56549), facing away from the bridge. Contractor shall provide a Feeston box with lugs (model 49018) and cover plate (model No. DCCGV) or approved equal. Provide necessary installation hardware as required.

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDOT ASSET NO. E320

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130

P.E. NUMBER

1/28/2021

DATE

	DATE	BY
A. LATHE		
PROJ. MANAGER		
DESIGN-DETAILED	09/20	G.S.
CHECKED-REVIEWED	09/20	J. Olund
DESIGN2-DETAILED2	-	-
DESIGN3-DETAILED3	-	-
REVISIONS 1	01/21	Removed 4" Dia. Conduits
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

BRIDGE LIGHTING PLAN - 1

SHEET NUMBER

148

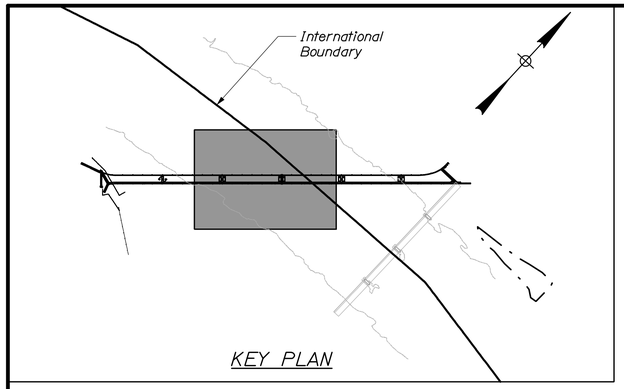
OF 160

Username:

Division:

Date:1/28/2021

Filename: 148_01_Bridge Lighting.dgn



KEY PLAN

NOTES:

1. Poles P9 to P13 shall be powered from a Canadian POE power source (by Others).
2. Two (2) Flagpoles (F2, F3) installed East of International Boundary shall be powered from a Canadian POE power source (by Others). One (1) Flagpole (F1) installed West of International Boundary shall be powered from the proposed meter cabinet installed in Madawaska. See sheet "Lighting Details - 2".
3. A spare conduit shall be provided between Aesthetic Lighting fixture C14 and A21 for future use.

PLAN

25 0 25 50
Scale of Feet

Proposed Aesthetic Lighting Locations	
Aesthetic Lighting Luminaire Number	Approximate Station Number
A10	108+65
A11	109+19
A12	109+70
A13	110+22
A14	110+75
A15	111+27
A16	111+80
A17	112+32
A18	112+85
A19	113+37
A20	113+89
A21	114+40
A22	113+89
A23	113+37
A24	112+85
A25	112+32
A26	111+80
A27	111+27
A28	110+75
A29	110+22
A30	109+70
A31	109+19
A32	108+65

TABLE-2

Proposed Aesthetic Lighting Locations	
Aesthetic Lighting Luminaire Number	Approximate Station Number
C13	115+47
C14	114+95
C15	114+40
C16	114+95
C17	115+47

HNTB

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

BRIDGE PLANS

MAINEDOT BR. NO. 2399
NBDOT ASSET NO. E320

STATE OF MAINE
JOSHUA K. OLUND
No. 12130
REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130
P.E. NUMBER

1/28/2021
DATE

	BY	DATE
PROJ. MANAGER	A. LATHE	09/20
DESIGN-DETAILED	H. Naeem	09/20
CHECKED-REVIEWED	M. Siddiqui	-
DESIGN2-DETAILED2	J. Olund	-
DESIGN3-DETAILED3	-	01/21
REVISIONS 1	Removed 4" Dia. Conduits	-
REVISIONS 2	-	-
REVISIONS 3	-	-
REVISIONS 4	-	-
FIELD CHANGES	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

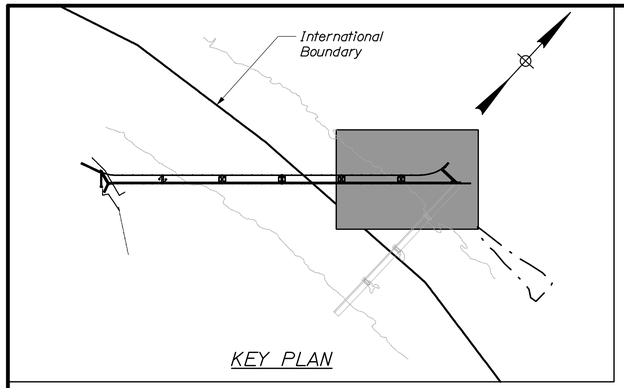
BRIDGE LIGHTING PLAN - 2

SHEET NUMBER

149

OF 160

Date:1/28/2021
Username:
Division:
Filename: 149_02_Bridge Lighting.dgn



KEY PLAN

℄ Brg. Pier No. 4
Sta. 116+00.00

℄ Brg. Pier No. 5
Sta. 119+15.00

C18	C19	C20	C21	C22	C23	C24	C25	C26	C27
2.05 2.15 2.28 2.28 2.26 2.22 2.08 1.96 2.25 2.77 2.60 2.04 1.95 2.03 2.08 2.08 2.03 2.00 1.89 1.81 2.13 2.65 2.52 2.03 2.00 2.19 2.30 2.23 2.26 2.00 1.86 2.15 2.65 2.58 2.18 2.26 2.50 2.65 2.64 2.54 2.28 2.28 2.66 2.72 2.23									0.78 0.79 0.88 1.00 0.96
3.31 3.30 3.41 3.28 3.28 3.42 3.32 3.32 3.75 4.45 4.13 3.47 3.15 3.12 3.22 2.85 3.02 3.23 3.25 3.30 3.73 4.48 4.18 3.59 3.38 3.46 3.74 3.70 3.64 3.55 3.51 3.85 4.64 4.39 3.88 3.77 3.91 4.18 3.61 3.04 2.69 2.85 3.14 3.20 2.79 2.33									
2.57 2.69 2.61 2.74 2.73 2.60 2.69 2.57 2.91 3.66 3.38 2.67 2.58 2.51 2.46 2.51 2.51 2.45 2.59 2.55 2.93 3.71 3.45 2.78 2.76 2.83 2.92 3.04 2.85 2.86 2.73 3.07 3.88 3.68 3.07 3.12 3.20 3.10 2.92 2.64 2.27 2.25 2.62 2.71 2.21 1.85 1.79									

C12 C11 P10 C10 C9 C8 P11 C7 C6 C5 P12 C4 C3 C2 P13 C1

35' High Pole

Junction Box-7

Junction Box-4

Light Standard
Corbel (Typ.)

To be connected to the Canadian POE power source. Conduit and cables by others. See note 1 and 2.

Province of New Brunswick, Canada
State Of Maine, USA

NOTES:

1. Poles P9 to P13 shall be connected to a Canadian POE power source (by Others). One (1) 240V circuit and one (1) 120V circuit shall be provided to power the lighting and pole mounted receptacles, respectively. Conduit and wiring shall be 2 inch conduit with 2#6 AWG type XHHW and 1#6 ground for lighting and two (2)#8 AWG type XHHW and 1#8 ground for pole mounted receptacles. Contractor shall cap the cables and terminate the conduit at Junction Box-4. Installation and connection of cables between Junction Box-4 and Canadian POE power source shall be by others.

2. Aesthetic lighting fixtures C1 to C27 shall be connected to a Canadian POE power source (by Others). One (1) 240V circuit shall be provided to power the Aesthetic Lighting fixtures. Conduit and wiring shall be 2 inch conduit with two (2)#6 AWG type XHHW and one (1)#6 ground. Installation and connection of cables between Junction Box-4 and Canadian POE power source shall be by Others.

Proposed Aesthetic Lighting	
Aesthetic Lighting Luminaire Number	Approximate Station Number
C1	121+78
C2	121+27
C3	120+73
C4	120+20
C5	119+69
C6	119+15
C7	118+65
C8	118+11
C9	117+57
C10	117+06
C11	116+55
C12	116+00
C18	116+00
C19	116+55
C20	117+06
C21	117+57
C22	118+11
C23	118+65
C24	119+15
C25	119+69
C26	120+20
C27	120+73

TABLE 3

PLAN

25 0 25 50
Scale of Feet

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

2173600

WIN 021736.00

MAINEDOT BR. NO. 2399
NBDTI ASSET NO. E320

BRIDGE PLANS

STATE OF MAINE — JOSHUA K. OLUND No. 12130 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

12130
P.E. NUMBER

1/28/2021
DATE

	BY	DATE
PROJ. MANAGER	A. LATHE	
DESIGN-DETAILED	G.S.	09/20
CHECKED-REVIEWED	M. Siddiqui	J. Olund	09/20
DESIGN2-DETAILED2	-	-	-
DESIGN3-DETAILED3	-	-	-
REVISIONS 1	Removed 4" Dia. Conduits	01/21
REVISIONS 2	-	-	-
REVISIONS 3	-	-	-
REVISIONS 4	-	-	-
FIELD CHANGES	-	-	-

INTERNATIONAL BRIDGE
SAINT JOHN RIVER
MADAWASKA, ME EDMUNDSTON, NB

BRIDGE LIGHTING PLAN - 3

SHEET NUMBER
150
OF 160

HNTB

Date:1/28/2021
Username:
Division:
Filename: 150_03_Bridge Lighting-30.dgn