



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

Janet T. Mills
GOVERNOR

Bruce A. Van Note
COMMISSIONER

January 27, 2023
Subject: Acadia Gateway
State WIN: 017163.03
Location: **Trenton**
Amendment No. 6

Dear Sir/Ms.:

No Request For Information will be accepted after the close of business on **Wednesday February 1, 2023**

Make the following changes to the bid documents:

In the Bid Book:

Remove from amendment five Proposal Schedule of Items totaling twelve pages, dated 1/19/2023 and **Replace** with the attached Proposal Schedule of items totaling twelve pages dated 1/26/2023

Remove from amendment five totaling seven pages Titled TABLE OF CONTENTS and **Replace** with the attached TABLE OF CONTENTS totaling seven pages

Remove pages seventy to seventy-three titled SPECIAL PROVISION SECTION 203 – EXCEVATION AND EMBANKMENT totaling four pages, and **Replace** with the attached SPECIAL PROVISION SECTION 203 – EXCEVATION AND EMBANKMENT totaling five pages

Remove page one hundred and ten titled SPEIAL PROVISIONS SECTION 604 – MANHOLES, INLETS, AND CATCH BASINS totaling one page and **Replace** with the attached titled SPECIAL PROVISIONS SECTION 604 – MANHOLES, INLETS, AND CATCH BASINS totaling one page

Insert SPECIAL PROVISION SECTION 620 – GEOTEXTILES totaling one page

Remove page one hundred and seventeen titled SPECIAL PROVISION SECTION 639 ENGINEERING FACILITIES totaling one page and **Replace** with the attached SPECIAL PROVISION SECTION 639 ENGINEERING FACILTIES totaling one page

Remove pages two hundred and sixty-two to two hundred and sixty-seven titled SECTION 01 41 00 SPECIAL INSTRUCTIONS totaling six pages, and **replace** with the attached SECTION 01 41 00 SPECIAL INSTRUCTIONS totaling five pages

Remove pages four hundred and sixteen to four hundred and twenty-four titled SECTION 04 70 00 STONE MASONARY VENEER totaling nine pages and **Replace** with the attached SECTION 04 70 00 STONE MASONARY VENEER totaling nine pages

Remove pages four hundred and seventy-six to four hundred and eighty-six titled SECTION 06 10 00 ROUGH CARPENTRY totaling eleven pages and **Replace** with the attached SECTION 06 10 00 ROUGH CARPENTRY totaling twelve pages

Insert SECTION 06 15 16 WOOD ROOF DECKING dated January 17, 2022, totaling three pages

Remove pages five hundred and sixty-three to five hundred and sixty-six titled SECTION 07 31 29 WOOD SHINGLE SIDING totaling four pages and **Replace** with the attached SECTION 07 31 29 WOOD SHINGLE SIDING totaling four pages

Remove pages seven hundred and seventeen to seven hundred and thirty titled SECTION 08 80 00 GLAZING totaling fourteen pages and **Replace** with the attached SECTION 08 80 00 GLAZING totaling thirteen pages

Remove pages one thousand three hundred and eighty-four to one thousand three hundred and eighty-seven titled SECTION 26 31 00 PHOTOVOLATIC COLLECTORS totaling four pages and **Replace** with the attached SECTION 26 31 00 PHOTOVOLATIC COLLECTORS totaling five pages

The following questions have been received:

Question: Concrete Note 6 on S000 states that Control Joints for the Elevated Slab shall be required as directed by the Engineer. The note also states that Control Joints shall be spaced not-to-exceed 12'0" on-center in both directions. Please confirm the spacing required for the Control Joints on the Elevated Slab for the Mezzanine and for the Stair Cap.

Response: Control joints are not required for the elevated slabs, only for slabs on grade.

Question: Please revise the bid form to the correct quantity of 20,000-gallon oxypro units.

Response: The quantity for Bid Item 910.30 - 20,000 Gallon Oxypro Unit should be 2 EA.

Question: Will stabilization geotextile be required on the subgrade of the new parking lots?

Response: Stabilization geotextile will be required as directed by the on-site Geotechnical Engineer as described in the Geotechnical Report and Special Provision 620. Payment will be under item 620.54 Stabilization Geotextile.

Question: Please revise the bid form to reflect the answer to the question regarding plastic and metal landscape edging.

Response: Schedule of Items shall be updated in Amendment #6 to remove the plastic edging line item, and will only include metal landscape edging, with a quantity of 1600LF.

Question: Concrete Note 12 on S000 states "Structural Steel below Finish Floor shall receive (2) coats of bituminous mastic". Please clarify what structural steel needs to receive this coating (all columns and beams, bottom 2' of columns only, all embedment surfaces, etc.).

Response: Those portions below FFE of concrete slabs extending below grade to footings. Coating shall be applied to bottom of base plate, exposed surfaces of base plate, exposed anchor bolts/nuts, as well as all steel column base connections and column sections extending below FFE slab elevation. Where applicable, all surfaces of shear lugs extending into top of foundation walls and footings would require the noted coating as well.

Question: Specification Section 26 01 00 paragraph 1.04 states, "Provide a \$60,000 allowance as specified in Division 01 for electrical utility company utility construction charges associated with the electrical services." There is no reference to the above mentioned \$60,000 allowance in division 1 and the Allowance Specification was removed in Amendment 003. Please clarify this allowance and if this amount should be carried under Div. 26.

Response: The allowance spec section 012100 and special provision 832 have been added to the documents in Amendment #5. The allowance of \$60,000 shall be carried under Item 832.071.

Question: Details 2 & 5 on A710 indicate TA-8 Counter Mounted Soap Dispenser on the sides of the Toilet Compartments. Please clarify.

Response: TA-8 on details 2 & 5 on A710 should be TA-9. A710 has been updated as part of Amendment #6.

Question: Detail 1 on A612 indicates 1 EA Corner Guard at the E ends of the N & S walls at the Vending Machines in Room 106 Passenger Waiting & Exhibits. Detail 1 on A714 indicates 2 EA Corner Guards at the E ends of the same walls. Please clarify.

Response: A612 has been updated in Amendment #6 to show 2 EA corner guards at the E ends of the walls by the vending machines to match A714.

Question: The FTA Disadvantaged Business Enterprise section A9 on page 1674 under Proposed Submission it references an original DBE Letter of Intent (see below) and original DBE Affidavit (see below). Is there a specific form that is to be used? None were found in the project documents.

Response: Neither of the two forms specified will be required for submission of bids.

Question: Detail 1 on A712 has three different items identified as TA-9. Please clarify.

Response: The TA-9 tags on A712 have been updated in Amendment #6 to key the correct items.

Question: Please provide Earthwork Computation Sheet to help clarify quantity discrepancies.

Response: Design team previously calculated 720 CY of common excavation and 1,335 CY of selected granular material for the building splay (not included in the building lump sum). Common excavation should be revised to a quantity of 10,355 CY.

Question: Does the department anticipate the need for erosion control geotextile?

Response: Yes, as specified on plans and details.

Question: Is onsite excavation suitable for fill slopes or will Common Borrow be required in fill slopes?

Response: Based on the geotechnical report, it looks like in general, the existing soils are 90%+ fines, which would not meet the gradation for Common Borrow unless mixed with imported soils. If the contractor wants to go that route and reuse the excavated soils, the contractor will need to provide tested samples to show that the soil meets the specifications for Common Borrow and approved by the engineer prior to placement.

Question: Room 124 Janitor Closet and Storage indicates T-1 for Flooring on A612. T-3 is listed as the Flooring for the 1st Floor Janitor Room (which is Room 124) on the Finish Schedule on A614. Please clarify.

Response: A612 has been updated in Amendment #6 to show T-3 in Room 124 to match the Finish Schedule.

Question: SF600 indicates 3X5 T&G decking at bus shelter roof and SF601 shows same for info kiosk, A210 detail 9 & 10 indicates that bus & info canopies to be 2 layers of ¾" paint grade plywood for decking in lieu of 3 X 6 Tongue and groove. Please confirm exterior structure decking material, species, and finish.

Response: Refer to SF601 for the tongue and groove decking at the bus shelter and kiosk with plywood on top. See below for decking requirements:

1.1 SOLID-SAWN WOOD ROOF DECKING

- A. Standard for Solid-Sawn Wood Roof Decking: Comply with AITC 112.*
- B. Roof Decking Species:
 - 1. Doug fir-larch (North), hem-fir (North), southern pine or western hemlock (North).**
- C. Roof Decking Nominal Size: 3 by 6.*
- D. Roof Decking Grade:
 - 1. Dense Standard Decking.**
- E. Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that are not exposed to view.*

F. *Moisture Content: Provide wood roof decking with 19 percent maximum moisture content at time of dressing.*

G. *Face Surface: Smooth.*

H. *Edge Pattern: Vee grooved.*

Question: Drawing a 612 indicates t-2 flooring in kitchen 115. T-2 is not on Finish schedule. Please provide

Response: Kitchen 115 should be T-1. A612 has been updated in Amendment #6.

Question: Corridor 117 indicates floor as FL- 1 which is polished concrete. However graphic on a 612 suggests tile. Please clarify if tile and tile type

Response: Corridor 117 should be T-1. A612 has been updated in Amendment #6.

Question: A613 indicates sealed concrete over entrances and bathrooms. Other a Drawings suggest concrete

Response: A613 has been updated in Amendment 5 to show Class A fire-rated exposed plywood flooring at the mezzanine level over the entrance and bathrooms.

Question: Structural drawings indicate plywood SF 101 D#3N and no concrete joist spacing also suggests design is for plywood, no concrete. Please confirm if concrete or plywood only

Response: The mezzanine space that is unusable shall have fire-rated plywood flooring only and no concrete. This has been updated in Amendment #5 in the drawings and Amendment #6 in Spec Section 061000.

Question: A702 keynote indicates swing gate "TBD" this ambiguity will result in guessing and in equal bidding. Please clarify scope or should this scope be excluded at all locations indicated as TBD?

Response: Swing gate drawings and details have been added to the documents in Amendment #5.

Question: Also see SG107 Detail 3 stone base TBD

Response: Note on drawing 3 on SG107 has been updated in Amendment #6. Stone base to match building stone veneer.

Question: Spec 09 72 13 calls for tackable wall covering WC-1. Details 3/A721 shows the mounting detail for this tackable wall. Note indicates see elevation for size and location.
Can't find an elevation where this material is to be used. Please indicate location and size

Response: There is no tackable wall covering in the project. Detail 3 on A721 and spec section 097213 will be removed from the project in Amendment #6.

Question: Detail 1 on A301 references Detail 3 on A823 at the Mezzanine level window (near Building Line 15). Plan sheet A823 does not have a Detail 3. Please clarify.

Response: Detail 3 on A823 has been added as part of Amendment #6.

Question: There is a curtainwall indicated at the dormer on drawing A301/1 and referenced to 3/A823. On A823 there is no curtain wall 3 shown. Is this curtainwall, window or other? Please provide updated drawing with dimensions, glass type, etc.

Response: Detail 3 on A823 has been added as part of Amendment #6 to show the curtainwall with glass type IG.

Question: A614 indicates WDTG, wood T & G plank wall, and remarks see partition M. A830 parton M indicates wood T & G plank. A203 indicates exterior wall type M1 at east exterior wall type m1 at east exterior facing walls type m1 at east exterior facing walls at column line 21 & 22. However, a311 detail 1 indicate these same walls to be acoustic wood looks panel. Please confirm if this plank is simply pine or a manufactured acoustic absorption system

Response: All interior wood plank walls should be acoustic wood-looks panels. Drawings A715, A816, A830, and A831 have been updated in Amendment #6 to clarify this. Wood tongue & groove planks are found at the ceiling of the double height public space.

Question: We are looking to bid the timber scope for this project. We are a more traditional timber frame company who still use pegged joints within our frame and hidden steel where required. I am wondering if the steel plates are a requirement or if you're open to the traditional look or mortise and tenon pegged joints. Please let me know so I can modify the bid as necessary.

Response: The project team is open to the pegged joints instead of the steel plates. Framing can be bid on as such.

Question: A614 indicates WDAT as Acoustic wood looks panel. This drawing, other drawings, or the spec does not give specifics on manufacture product number, color or species please clarify. The material name is indicated on drawing a 714, a 715, and a 311

Response: Basis of Design is Decoustics Fori. Color/Finish to be selected during construction.

Question: A614 indicated WDC-1 as wood slat ceiling wood works-Linear Planks-6". The spec does not give a specific product number, species, etc. please confirm if armstrong #6460W1 NMP is the product you want

Response: Armstrong #6460W1 is acceptable as long as it meets the specifications. Color and finish to be selected by architect during construction once samples are provided.

Question: Spec 04700 PP 2.2, D, 1 indicates stoneyard Boston blend to be a mixture of ashlar and ledgestones. Ashlar and ledgestones have a cost differential please confirm ratio of ashlar and ledgestone so an accurate bid can be given

Response: Spec section 04700 PP 2.2, D, 1 has been updated in Amendment #6 to call for just ashlar stone veneer.

Question: Please confirm EV charging enclosure louver quantity, size, function (100% blank off) ref:A103, SF602, MH101, MH 601, EP 101

Response: The louvers at the EV charging enclosure are blank offs. Elevations have been added to drawings A103 and A803 have been updated and drawing A104 has been added to the set in Amendment #6.

Question: General note 2 on A603 indicates GWB smoke partitin at corridor Z16. Corridor Z16 is not shown on drawings. Please clarify where smoke partitions are to be placed.

Response: General Note 2 on A603 has been removed in Amendment #6. This note is obsolete.

Question: Due to the signing of the Build America, Buy America (BABA) Act on Nov. 15, 2022, requiring any construction materials procured under the award be manufactured in the United States, and the likely event of that goal not being met, if the Bidder acknowledges the Certificate of Non-Compliance on the Buy America forms provided, will the bid be considered unresponsive and therefore rejected?

Response: The new Build America, Buy America Act (BABA) does not apply to this project.

Question: Is there a specification for a water detection system in the geothermal vault. It is mentioned in the details but cannot find anything in the specs

Response: There is not a detailed specification for the water detection switch in the geothermal vault. The switch is referenced on the drawings and under 2.4 A. (9) in the specification.

Question: Will the 12-inch underdrain around the building be paid for under the unit price pay item or will it be incidental to the building?

Response: The 12-inch underdrain around the building shall be paid for under item 605.11. The quantity for item 605.11 will be updated to 910LF in Amendment #6.

Question: Details on A713 & A714 indicate 1" Stone Veneer. Even though it is not shown in these details, please confirm the Type K wall is required in the following locations: K line, 18.6-21- and 22-line, D-F.

Response: Drawings A202 and A703 identify the extents of wall type K. Wall Type K is along Column line 18.6 (between K and H.8), Column line K and H (between 18.6 and 22), Column line 22 (between H and B), and Column line B (between 21 and 22).

Question: Per plan sheet A202, Detail 7/A813 represents A-17 & A-18. Detail 7/A813 also represent A-19 & A-20. This detail indicates that 1" Stone Veneer is required at all of the noted locations (A-17, A-18, A-19, & A-20). Detail 5/A715 does not indicate any 1" Stone Veneer at A-19 or A-20. Also, Detail 4/A822 appears to indicate Aluminum Curtainwall being at this elevation. Please confirm whether any 1" Stone Veneer is required along A line, 16-20.

Response: There is no 1" stone veneer along column line K between 16 and 20, see drawing 4 on A714.

Consider these changes and information prior to submitting your bid on **February 8, 2023**.

Sincerely,



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

1/26/2023

Maine Department of Transportation

Proposal Schedule of Items

Page 1 of 12

Proposal ID: 017163.03

Project(s): 017163.03

SECTION: 1 INITIAL GROUP

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0010	201.11 CLEARING	8.100 AC	_____	 _____	_____	 _____
0020	203.20 COMMON EXCAVATION	10,355.000 CY	_____	 _____	_____	 _____
0030	203.21 ROCK EXCAVATION	10.000 CY	_____	 _____	_____	 _____
0040	203.24 COMMON BORROW	5,737.000 CY	_____	 _____	_____	 _____
0050	203.25 GRANULAR BORROW	2,657.000 CY	_____	 _____	_____	 _____
0060	203.29 SELECTED GRANULAR MATERIAL	1,335.000 CY	_____	 _____	_____	 _____
0070	203.38 FILTER SAND	205.000 CY	_____	 _____	_____	 _____
0080	206.061 STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES, BELOW GRADE	10.000 CY	_____	 _____	_____	 _____
0090	206.07 STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	10.000 CY	_____	 _____	_____	 _____
0100	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	9,360.000 CY	_____	 _____	_____	 _____
0110	304.14 AGGREGATE BASE COURSE - TYPE A	3,095.000 CY	_____	 _____	_____	 _____
0120	403.2081 12.5 MM POLYMER MODIFIED HOT MIX ASPHALT	1,529.000 T	_____	 _____	_____	 _____

Maine Department of Transportation

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			Dollars	Cents	Dollars	Cents
0130	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	134.000 T	_____	 _____	_____	 _____
0140	403.213 HOT MIX ASPHALT 12.5 MM BASE	3,266.000 T	_____	 _____	_____	 _____
0150	409.15 BITUMINOUS TACK COAT - APPLIED	2,682.000 G	_____	 _____	_____	 _____
0160	419.30 SAW CUTTING BITUMINOUS PAVEMENT	525.000 LF	_____	 _____	_____	 _____
0170	502.342 STRUCTURAL CONCRETE ROADWAY TRUCK APRON	3.000 CY	_____	 _____	_____	 _____
0180	525.19 GRANITE SEATING BLOCKS	37.000 EA	_____	 _____	_____	 _____
0190	603.142 10" CULV PIPE OPTION III	93.000 LF	_____	 _____	_____	 _____
0200	603.159 12 INCH CULVERT PIPE OPTION III	1,189.000 LF	_____	 _____	_____	 _____
0210	603.169 15 INCH CULVERT PIPE OPTION III	404.000 LF	_____	 _____	_____	 _____
0220	603.179 18 INCH CULVERT PIPE OPTION III	348.000 LF	_____	 _____	_____	 _____
0230	603.199 24 INCH CULVERT PIPE OPTION III	200.000 LF	_____	 _____	_____	 _____
0240	603.801 24" TRASH RACK	2.000 EA	_____	 _____	_____	 _____

Maine Department of Transportation

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			Dollars	Cents	Dollars	Cents
0250	604.077 72 INCH CATCH BASIN TYPE A1-C	1.000 EA	_____	 _____	_____	 _____
0260	604.131 4' DIAMETER CATCH BASIN	12.000 EA	_____	 _____	_____	 _____
0270	604.15 MANHOLE	8.000 EA	_____	 _____	_____	 _____
0280	604.154 72 INCH MANHOLE	1.000 EA	_____	 _____	_____	 _____
0290	604.1542 72 INCH OUTLET CONTROL STRUCTURE	2.000 EA	_____	 _____	_____	 _____
0300	604.24 CATCH BASIN TYPE F	16.000 EA	_____	 _____	_____	 _____
0310	605.081 4" LINER UNDERDRAIN	386.000 LF	_____	 _____	_____	 _____
0320	605.082 4" FOUNDATION DRAIN	1,000.000 LF	_____	 _____	_____	 _____
0330	605.091 6" WET POND UNDERDRAIN	32.000 LF	_____	 _____	_____	 _____
0340	605.109 10" UNDERDRAIN TYPE C	505.000 LF	_____	 _____	_____	 _____
0350	605.11 12 INCH UNDERDRAIN TYPE C	910.000 LF	_____	 _____	_____	 _____
0360	605.12 15 INCH UNDERDRAIN TYPE C	127.000 LF	_____	 _____	_____	 _____
0370	605.19 6 INCH LONGITUDINAL UNDERDRAIN	630.000 LF	_____	 _____	_____	 _____

Maine Department of Transportation

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			Dollars	Cents	Dollars	Cents
0380	605.31 UNDERDRAIN CLEANOUT	8.000 EA	_____	 _____	_____	 _____
0390	608.251 PRECAST CONCRETE PAVERS	3,000.000 SY	_____	 _____	_____	 _____
0400	608.26 CURB RAMP DETECTABLE WARNING FIELD	308.000 SF	_____	 _____	_____	 _____
0410	609.11 VERTICAL CURB TYPE 1	2,229.000 LF	_____	 _____	_____	 _____
0420	609.12 VERTICAL CURB TYPE 1 - CIRCULAR	1,268.000 LF	_____	 _____	_____	 _____
0430	609.26 CURB TRANSITION SECTION B TYPE 1	2.000 EA	_____	 _____	_____	 _____
0440	610.08 PLAIN RIPRAP	20.000 CY	_____	 _____	_____	 _____
0450	610.21 RIVER STONES	27.000 CY	_____	 _____	_____	 _____
0460	610.61 NATURAL BOULDER TYPE A 36"X36" - 42"X42"	26.000 EA	_____	 _____	_____	 _____
0470	610.61 NATURAL BOULDER TYPE B 24"X24" - 36"X36"	33.000 EA	_____	 _____	_____	 _____
0480	610.61 NATURAL BOULDER TYPE C 18"X18" - 24"X24"	24.000 EA	_____	 _____	_____	 _____
0490	615.20 UNCOMPACTED SOIL FILTER MEDIUM	100.000 CY	_____	 _____	_____	 _____

Maine Department of Transportation

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			Dollars	Cents	Dollars	Cents
0500	616.09 RHODORA SODDING	60.000 SY	_____	 _____	_____	 _____
0510	616.10 HUCKLEBERRY SODDING	160.000 SY	_____	 _____	_____	 _____
0520	616.11 HAY-SCENTED FERN SODDING	340.000 SY	_____	 _____	_____	 _____
0530	617.33 SUPERHUMUS TOPSOIL	2,292.000 CY	_____	 _____	_____	 _____
0540	618.147 WETLAND SEEDING	6.000 UN	_____	 _____	_____	 _____
0550	618.149 SPECIAL SEED MIX LAWN	7.000 UN	_____	 _____	_____	 _____
0560	618.20 ANNUAL RYE GRASS SEED	200.000 LB	_____	 _____	_____	 _____
0570	618.27 MEADOW SEEDING MEADOW	21.000 UN	_____	 _____	_____	 _____
0580	618.29 RETENTION POND SEEDING	2.000 UN	_____	 _____	_____	 _____
0590	620.54 STABILIZATION/REINFORCEMENT GEOTEXTILE	10.000 SY	_____	 _____	_____	 _____
0600	621.037 EVERGREEN TREES (5 FOOT - 6 FOOT) GROUP A	6.000 EA	_____	 _____	_____	 _____
0610	621.043 EVERGREEN TREES (6 FOOT - 8 FOOT) GROUP A	43.000 EA	_____	 _____	_____	 _____

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			Dollars	Cents	Dollars	Cents
0620	621.046 EVERGREEN TR (8' - 10') GP A	33.000 EA	_____	 _____	_____	 _____
0630	621.052 EVERGREEN TREES (10 FOOT - 12 FOOT) GROUP A	32.000 EA	_____	 _____	_____	 _____
0640	621.201 MEDIUM DECIDUOUS TREE (2 INCH - 2.50 INCH CALIPER) GROUP A	5.000 EA	_____	 _____	_____	 _____
0650	621.255 LARGE DECIDUOUS TREES (8 FOOT - 10 FOOT) GROUP A	21.000 EA	_____	 _____	_____	 _____
0660	621.263 LARGE DECIDUOUS TREES (10 FOOT - 12 FOOT) GROUP C	33.000 EA	_____	 _____	_____	 _____
0670	621.2641 MULTISTEM DECIDUOUS TREE (RIVER BIRCH) GROUP A	24.000 EA	_____	 _____	_____	 _____
0680	621.273 LARGE DECIDUOUS TREE (2 INCH - 2.50 INCH CALIPER) GROUP A	30.000 EA	_____	 _____	_____	 _____
0690	621.274 LARGE DECIDUOUS TREE (2 INCH - 2.50 INCH CALIPER) GROUP B	13.000 EA	_____	 _____	_____	 _____
0700	621.279 LARGE DECIDUOUS TREE (2.50 INCH - 3 INCH CALIPER) GROUP A	10.000 EA	_____	 _____	_____	 _____
0710	621.285 LARGE DECIDUOUS TREE (3 INCH - 3.50 INCH CALIPER) GROUP A	39.000 EA	_____	 _____	_____	 _____
0720	621.291 LARGE DECIDUOUS TREE (3.50 INCH - 4 INCH CALIPER) GROUP A	3.000 EA	_____	 _____	_____	 _____

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			Dollars	Cents	Dollars	Cents
0730	621.292 LARGE DECIDUOUS TREE (3.50 INCH - 4 INCH CALIPER) GROUP B	1.000 EA	_____	 _____	_____	 _____
0740	621.391 EVERGREENS (15 INCH - 18 INCH) GROUP C	204.000 EA	_____	 _____	_____	 _____
0750	621.50 BROADLEAF EVERGREEN (2.50 FOOT - 3 FOOT) GROUP C	3.000 EA	_____	 _____	_____	 _____
0760	621.525 BAYBERRY (2 FOOT - 3 FOOT)	64.000 EA	_____	 _____	_____	 _____
0770	621.542 DECIDUOUS SHRUBS (18 INCH - 24 INCH) GROUP C	3.000 EA	_____	 _____	_____	 _____
0780	621.546 DECIDUOUS SHRUBS (2 FOOT - 3 FOOT) GROUP A	450.000 EA	_____	 _____	_____	 _____
0790	621.547 DECIDUOUS SHRUBS (2 FOOT - 3 FOOT) GROUP B	336.000 EA	_____	 _____	_____	 _____
0800	621.548 DECIDUOUS SHRUBS (2 FOOT - 3 FOOT) GROUP C	13.000 EA	_____	 _____	_____	 _____
0810	621.552 DECIDUOUS SHRUBS (3 FOOT - 4 FOOT) GROUP A	4.000 EA	_____	 _____	_____	 _____
0820	621.553 DECIDUOUS SHRUBS (3 FOOT - 4 FOOT) GROUP B	3.000 EA	_____	 _____	_____	 _____
0830	621.554 DECIDUOUS SHRUBS (3 FOOT - 4 FOOT) GROUP C	6.000 EA	_____	 _____	_____	 _____

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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0840	621.558 DECIDUOUS SHRUBS (4 FOOT - 5 FOOT) GROUP A	11.000 EA	_____	 _____	_____	 _____
0850	621.662 VINES (18 INCH - 24 INCH) GROUP C	4.000 EA	_____	 _____	_____	 _____
0860	621.711 HERBACEOUS PERENNIALS GROUP B	200.000 EA	_____	 _____	_____	 _____
0870	621.98 METAL LANDSCAPE EDGING	1,600.000 LF	_____	 _____	_____	 _____
0880	625.23 IRRIGATION SYSTEM	LUMP SUM	LUMP SUM		_____	 _____
0890	627.18 12 " SOLID WHITE PAVEMENT MARKING	160.000 LF	_____	 _____	_____	 _____
0900	627.71 4 INCH WHITE PAVEMENT MARKING LINE	2,792.000 LF	_____	 _____	_____	 _____
0910	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	9,070.000 SF	_____	 _____	_____	 _____
0920	634.228 CONCRETE TRANSFORMER PAD GENERATOR PAD	2.000 EA	_____	 _____	_____	 _____
0930	639.18 FIELD OFFICE TYPE A	1.000 EA	_____	 _____	_____	 _____
0940	641.34 TRASH RECEPTACLE	4.000 EA	_____	 _____	_____	 _____
0950	641.35 ALUMINUM FLAG POLE	2.000 EA	_____	 _____	_____	 _____

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 017163.03

Project(s): 017163.03

SECTION: 1 INITIAL GROUP

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0960	643.60 FLASHING BEACON AT: Gateway Drive / Bar harbor Road	LUMP SUM	LUMP	SUM	_____	_____
0970	652.312 TYPE III BARRICADE	10.000 EA	_____	_____	_____	_____
0980	652.33 DRUM	25.000 EA	_____	_____	_____	_____
0990	652.34 CONE	100.000 EA	_____	_____	_____	_____
1000	652.35 CONSTRUCTION SIGNS	500.000 SF	_____	_____	_____	_____
1010	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP SUM	LUMP	SUM	_____	_____
1020	652.38 FLAGGER	1,000.000 HR	_____	_____	_____	_____
1030	655.40 PHOTOVOLTAIC SYSTEM	LUMP SUM	LUMP	SUM	_____	_____
1040	656.71 LEVEL LIP SPREADER	86.000 CY	_____	_____	_____	_____
1050	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP	SUM	_____	_____
1060	659.10 MOBILIZATION	LUMP SUM	LUMP	SUM	_____	_____
1070	801.014 PUMP STATION 8 FOOT DIAMETER	1.000 EA	_____	_____	_____	_____

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 017163.03

Project(s): 017163.03

SECTION: 1 INITIAL GROUP

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1080	801.121 SEWER FORCE MAIN 2.5 INCH	1,120.000 LF	_____	 _____	_____	 _____
1090	801.17 8 INCH PVC SANITARY SEWER (SDR-35)	230.000 LF	_____	 _____	_____	 _____
1100	802.103 WATERLINE 2 INCH	LUMP SUM	LUMP SUM		_____	 _____
1110	802.20 SEPTIC TANKS 10,000 GALLON	1.000 EA	_____	 _____	_____	 _____
1120	802.20 SEPTIC TANKS 20,000 GALLON	1.000 EA	_____	 _____	_____	 _____
1130	802.23 SUBSURFACE WASTEWATER DISPOSAL SYSTEM	LUMP SUM	LUMP SUM		_____	 _____
1140	803.01 TEST PITS	3.000 EA	_____	 _____	_____	 _____
1150	803.173 SEWER MANHOLE - 4 FOOT DIAMETER	4.000 EA	_____	 _____	_____	 _____
1160	803.173 SEWER MANHOLE - 4 FOOT DIAMETER CLEANOUT	3.000 EA	_____	 _____	_____	 _____
1170	822.301 PRE-INSULATED DUCTILE IRON PIPE	5.000 LF	_____	 _____	_____	 _____
1180	823.33 6 INCH GATE VALVE WITH BOX	1.000 EA	_____	 _____	_____	 _____
1190	823.3351 4 INCH GATE VALVE AND BOX	1.000 EA	_____	 _____	_____	 _____

1/26/2023

Maine Department of Transportation

Proposal Schedule of Items

Page 11 of 12

Proposal ID: 017163.03

Project(s): 017163.03

SECTION: 1 INITIAL GROUP

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1200	824.50 FIRE SUPPRESSION TANK	LUMP SUM	LUMP	SUM	_____	_____
1210	832.071 CONTRACTOR ALLOWANCE Fiber Optic Service	LUMP SUM	LUMP	SUM	5,000.00	
1220	832.071 CONTRACTOR ALLOWANCE Telephone Service	LUMP SUM	LUMP	SUM	5,000.00	
1230	832.071 CONTRACTOR ALLOWANCE Versant Power	LUMP SUM	LUMP	SUM	60,000.00	
1240	834.323 DRY HYDRANT	LUMP SUM	LUMP	SUM	_____	_____
1250	841.48 BOLLARDS	3.000 EA	_____	_____	_____	_____
1260	890.07 BIKE RACKS	20.000 EA	_____	_____	_____	_____
1270	910.30 SPECIAL WORK 20,000 GAL OXYPRO UNIT	2.000 EA	_____	_____	_____	_____
1280	DIV. 10 SPECIALTIES MISC SPECIALITIES	LUMP SUM	LUMP	SUM	_____	_____
1290	DIV. 12 FURNISHINGS	LUMP SUM	LUMP	SUM	_____	_____
1300	DIV. 21 FIRE SUPPRESSION	LUMP SUM	LUMP	SUM	_____	_____
1310	DIV. 22 PLUMBING	LUMP SUM	LUMP	SUM	_____	_____

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 017163.03

Project(s): 017163.03

SECTION: 1 INITIAL GROUP

Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1320	DIV. 23 HVAC	LUMP SUM	LUMP	SUM	_____	_____
1330	DIV. 26 ELECTRICAL	LUMP SUM	LUMP	SUM	_____	_____
1340	DIV. 3 CONCRETE	LUMP SUM	LUMP	SUM	_____	_____
1350	DIV. 4 MASONRY	LUMP SUM	LUMP	SUM	_____	_____
1360	DIV. 5 METALS	LUMP SUM	LUMP	SUM	_____	_____
1370	DIV. 6 WOOD & PLASTICS	LUMP SUM	LUMP	SUM	_____	_____
1380	DIV. 7 THERMAL & MOISTURE PROTECTION	LUMP SUM	LUMP	SUM	_____	_____
1390	DIV. 8 DOORS & WINDOWS	LUMP SUM	LUMP	SUM	_____	_____
1400	DIV. 9 FINISHES	LUMP SUM	LUMP	SUM	_____	_____
Section: 1			Total:		_____	_____
			Total Bid:		_____	_____

TABLE OF CONTENTS

Volume 1 of 4

DIVISION 0 – SPECIAL PROVISIONS

Section 104	Utilities
Section 105	Limitations of Operations
Section 105	Environmental Requirements
Section 107	Control of Work
Section 107	Prosecution and Progress
Section 108	Asphalt Escalator
Section 201	Clearing Right of Way
Section 203	Excavation and Embankment
Section 206	Structural Excavation
Section 304	Aggregate Base and Subbase Course
Section 401	Hot Mix Asphalt Pavement
Section 403	Hot Mix Asphalt
Section 409	Bituminous Tack Coat
Section 419	Sawing and Sealing Joints in Bituminous Pavement
Section 502	Structural Concrete
Section 502	Roadway Truck Apron
Section 603	Pipe Culverts and Storm Drains
Section 604	Manholes, Inlets, and Catch Basins
Section 605	Underdrains
Section 608	Sidewalks
Section 609	Curb
Section 610	Stone Fill, Riprap, Stone Blanket, and Stone Ditch Protection
Section 620	Geotextiles
Section 627	Pavement Markings
Section 639	Engineering Facilities
Section 643	Traffic Signals
Section 652	Maintenance of Traffic
Section 656	Temporary Soil Erosion and Water Pollution Control
Section 659	Mobilization
Section 801	Sanitary Sewer HHE-200 Application
Section 802	Water Service Geotechnical Engineering Study Environmental Package
Section 832	Allowance

DIVISION 1 - GENERAL REQUIREMENTS

Section 011000	Summary
Section 012200	Unit Prices
Section 012500	Substitution Procedures
Section 012501	Substitution Form

Section 012900	Payment Procedures
Section 013100	Project Management and Coordination
Section 013200	Construction Progress Documentation
Section 013300	Submittal Procedures
Section 014000	Quality Assurance
Section 014100	Special Inspections
Section 014200	References
Section 015000	Temporary Facilities and Controls
Section 016000	Product Requirements
Section 017300	Execution
Section 017419	Construction Waste Management and Disposal
Section 017600	Protection of Installed Construction
Section 017700	Closeout Procedures
Section 017823	Operation and Maintenance Data
Section 017839	Project Record Documents
Section 017900	Demonstration and Training
Section 019113	General Commissioning Requirements

DIVISION 2 - EXISTING CONDITIONS - Not Used

DIVISION 3 - CONCRETE

Section 033000	Cast-In-Place Concrete
Section 033519	Polished Concrete Slabs

DIVISION 4 - MASONRY

Section 042113	Brick Masonry
Section 042200	Concrete Unit Masonry
Section 047000	Stone Veneer Masonry

Volume 2 of 4

DIVISION 5 - METALS

Section 051200	Structural Steel
Section 053100	Steel Deck
Section 055000	Metal Fabrications
Section 055005	Miscellaneous Metals
Section 055113	Metal Pan Stairs
Section 055213	Pipe and Tube Railings

DIVISION 6 - WOOD AND PLASTICS

Section 061000	Rough Carpentry
Section 061323	Heavy Timber Construction
Section 061516	Wood Decking
Section 061600	Sheathing
Section 061850	Structural Glued-Laminated Timber

Section 062013	Exterior Finish Carpentry
Section 062023	Interior Finish Carpentry
Section 064113	Wood-Veneer-Faced Architectural Cabinets
Section 064116	Plastic-Laminate-Faced Architectural Cabinets

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

Section 071115	Bituminous Dampproofing
Section 071416	Cold Fluid-Applied Waterproofing
Section 072100	Thermal Insulation
Section 072726	Air and Vapor Barriers
Section 073129	Wood Shingle Siding
Section 074113	Standing-Seam Metal Roof Panels
Section 076200	Sheet Metal Flashing and Trim
Section 077253	Snow Guards
Section 078110	Cementitious Fireproofing
Section 078410	Firestopping
Section 079200	Joint Sealants

DIVISION 8 - DOORS AND WINDOWS

Section 081113	Hollow Metal Doors and Frames
Section 081416	Flush Wood Doors
Section 083113	Access Doors and Frames
Section 083323	Overhead Coiling Doors
Section 084113	Aluminum-Framed Entrances
Section 084413	Glazed Aluminum Curtain Walls
Section 084523	Fiberglass-Sandwich-Panel Assemblies
Section 085120	Steel Entrances
Section 085123	Steel Windows
Section 087100	Door Hardware
Section 088000	Glazing
Section 089119	Fixed Louvers

DIVISION 9 - FINISHES

Section 092900	Gypsum Board Assemblies
Section 093000	Tiling
Section 095113	Acoustical Panel Ceilings
Section 095427	Acoustic Wood Ceilings
Section 096500	Resilient Floor Tile
Section 096513	Resilient Wall Base and Accessories
Section 096813	Tile Carpeting
Section 097213	Tackable Wall Covering
Section 099100	Painting

DIVISION 10 - SPECIALTIES

Section 101400	Signage
Section 101400a	Message Schedule

Section 102114	Toilet Compartments
Section 102800	Toilet Accessories
Section 104400	Fire Protection Specialties
Section 105113	Metal Lockers
Section 107516	Ground-Set Flagpoles

DIVISION 12 - FURNISHINGS

Section 123661	Simulated Stone Countertops
Section 126000	Furniture

Volume 3 of 4

DIVISION 21 - FIRE SUPPRESSION

Section 211313	Wet Pipe Sprinkler System, Fire Protection
Section 213000	Fire Pumps

DIVISION 22 – PLUMBING

Section 220800	Commissioning of Plumbing
Section 221116	Domestic Water Piping
Section 221123	Domestic-Water Packaged Booster Pumps
Section 221316	Plumbing Sanitary and Storm Piping
Section 221429	Sump Pumps
Section 224000	Plumbing Fixtures

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

Section 230500	Common Work Results for Mechanical
Section 230593	Testing, Adjusting, And Balancing
Section 230800	Commissioning Of HVAC
Section 230900	Instrumentation and Control For HVAC
Section 230993	Sequence of Operations
Section 232113	Hydronic HVAC Piping
Section 232123	Hydronic Pumps
Section 233113	Ductwork
Section 233423	Power and Gravity Ventilators
Section 233600	Air Terminals
Section 233713	Diffusers, Registers, And Grilles
Section 236423	Water-Cooled, Scroll Water Chillers
Section 237000	Closed Loop Geothermal Heat Exchanger
Section 237002	Geothermal Closed Loop Thermal Conductivity Test
Section 237200	Air-To-Air Energy Recovery Equipment
Section 237314	Modular Indoor Central-Station Air-Handling Units
Section 238130	Ductless Split-System Air-Conditioning Units
Section 238219	Fan-Coil Units

Section 238239 Unit Heaters

DIVISION 26 – ELECTRICAL

Section 260100 Basic Electrical Requirements
Section 260519 Low-Voltage Electrical Power Conductors and Cables
Section 260523 Control-Voltage Electrical Power Cables
Section 260526 Grounding and Bonding for Electrical Systems
Section 260529 Hangers and Supports for Electrical Systems
Section 260533 Raceways and Boxes for Electrical Systems
Section 260543 Underground Ducts and Raceways for Electrical Systems

Volume 4 of 4

Section 260544 Sleeves and Sleeve Seals for Electrical Raceways and Cabling
Section 260548 Vibration and Seismic Controls for Electrical Systems
Section 260553 Identification for Electrical Systems
Section 260572 Overcurrent Protective Device Short-Circuit Study
Section 260573 Overcurrent Protective Device Coordination Study
Section 260801 Commissioning of Electrical Systems
Section 260923 Lighting Control Devices
Section 260943 Network Lighting Controls
Section 262200 Low-Voltage Transformers
Section 262416 Panelboards
Section 262713 Electricity Metering
Section 262726 Wiring Devices
Section 262813 Fuses
Section 262816 Enclosed Switches and Circuit Breakers
Section 262913 Enclosed Controllers
Section 263100 Photovoltaic Collectors
Section 263213 Engine Generators
Section 263600 Transfer Switches
Section 264113 Lightning Protection for Structures
Section 265100 Interior Lighting
Section 265219 Emergency and Exit Lighting
Section 265600 Exterior Lighting

DIVISION 27 – COMMUNICATIONS

Section 271100 Communications Equipment Room Fittings
Section 271300 Communications Backbone Cabling
Section 271500 Communications Horizontal Cabling
Section 275116 Public Address and Mass Notification Systems

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

Section 280513 Conductors and Cables for Electronic Safety And Security

Section 281600 Intrusion Detection
Section 283111 Digital, Addressable Fire-Alarm System

DIVISION 31 – EARTHWORK – NOT USED

~~Section 312316 Excavation~~

DIVISION 32 – EXTERIOR IMPROVEMENTS

Section 321400 Unit Pavers
Section 323000 Site Improvements
Section 328400 Irrigation System
Section 329200 Grasses
Section 329300 Planting
Section 329400 Topsoil

DIVISION 33 – UTILITIES – NOT USED

END OF TABLE OF CONTENTS

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SPECIAL PROVISION
SECTION 203 - EXCAVATION AND EMBANKMENT

The provisions of Section 203 of the “State of Maine, Department of Transportation, Standard Specifications, Revision of March 2020” shall apply with the following additions and modifications:

203.02 Materials Borrow shall consist of the Division 700 materials noted in the MaineDOT specifications with additional material as noted in the Geotechnical Engineering Study appended to these specifications.

Submittals shall be provided by the contractor at least 2 weeks in advance of imported fill use.

Submit 75 lb. sample of each type of fill in airtight container to testing laboratory.

Submit name of imported materials source.

Submit laboratory tests on materials from the following tests:

Moisture and density relationship: ASTM D 1557 or D 698 as required by the Geotechnical Engineering Study.

Mechanical Analysis AASHTO T-88

203.04 General:

Excavation shall include the construction of ditches as shown in the plan set for the project.

Maintenance of existing flows:

1. Keep existing sewers and drains in operation.
2. If existing sewers and drains are disturbed, provide for maintenance of such flows until work is completed.
3. Do not allow raw sewage to flow on ground surface or stand in excavation.

Excavation shall conform to the requirements contained within the Geotechnical Engineering Study by Fessenden Geo-Environmental Services dated November 2012 or the requirements of the MaineDOT specifications whichever is stricter. The Geotechnical Engineering Study is appended to these specifications. The Geotechnical Engineering Study notes in the general discussion and recommendations that the top two feet of site soils are unsuitable and should be removed prior to any fill construction.

Prior to placement of fill, the subgrade should be prepared as outlined in the Geotechnical Engineering Study. Compact subgrade to density equal to or greater than the requirements for the subsequent fill material.

Place fill and compact as required by the Geotechnical Engineering Study

The Contractor shall excavate rock if encountered in the lines and grades indicated on the drawings, shall dispose of the excavated material and shall furnish acceptable material for backfill in place of the excavated rock, if required. In general, rock in pipe trenches shall be excavated so as to be not less than six inches (6") from the pipe after it has been installed. If needed, before the pipe is laid, the trench shall be backfilled to the established trench profile with thoroughly compacted, suitable material or when specified or indicated on the drawings, with the same material as required for bedding the pipe, furnished and placed at no additional cost to the Owner.

Excavation for the building footings inside the exterior foundation wall shall be included in the building lump sum work. Areas outside the building exterior foundation wall shall be paid for under common excavation and shall be measured as described in Section 203.18.

203.042 Explosives:

The Contractor shall keep explosives on the site only in such quantity as may be needed for the work underway and only during such time as they are to be used. The Contractor shall notify the Engineer, in advance, of his intentions to store and use explosives. Explosives shall be stored in a secure manner and separate from all tools. Caps or detonators shall be safely stored at least 100 feet distant from the explosives. When the need for explosives has ended all such materials shall be removed promptly from the work site. The Contractor shall observe all local ordinances, State and Federal laws relating to the transportation, storage and use of explosives. In the event that a licensed blaster is required by law, then said blaster shall maintain his license on the physical premises during the work and shall provide examination of the license to the Engineer or other officials as required.

203.043 Blasting Precautions:

All operations involving explosives shall be conducted with all possible care to avoid injury to persons and property. Blasting shall be done only with such quantities and strengths of explosives and in such a manner as will break the rock in approximately the lines and grades and yet will leave the rock not excavated in an un-shattered condition. Care shall be taken to avoid excessive cracking of the rock upon or against which any structure will be built, and to prevent injury to existing pipes or other structures and property above or below ground. Rock shall be well covered with adequate soil or blasting mats or both when required. Sufficient warning shall be given to all persons in the vicinity of the work before a charge is detonated. All blasting shall be completed within a distance of 50 feet before any portion of a masonry structure is placed or any pipe is laid.

Any site where electric blasting caps are located or where explosive charges are being placed or have been placed shall be designated as a "Blasting Area". A "blasting area" within three hundred (300) feet of any traveled way shall be marked by approved signs with the information similar to the following:

"BLASTING AREA – TURN OFF RADIO TRANSMITTERS"

and on the reverse side:

"END OF BLASTING AREA"

The Contractor shall notify each public utility company having structures in proximity to the site of work of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take sufficient precautions to protect their property from injury. Such notice shall not relieve the contractor of responsibility for any damage resulting from his blasting operations.

All persons within the danger zone of blasting operations shall be warned by the Contractor and no blasting shall be done until the zone is cleared. Flaggers shall be furnished by the Contractor and stationed such that traffic may be stopped during blasting operations.

The Contractor shall be liable for all damages to persons and property caused by blasting or explosions or arising from neglect to properly guard and protect the excavations and all portions of the work, and he shall wholly indemnify the Town against all claims and such account. A pre-blast/construction survey shall be completed at the expense of the Contractor prior to any blasting. No compensations will be allowed to the Contractor in any event or under any circumstances for loss incurred by him arising from his neglect to fully comply with these requirements.

A pre-blast/construction survey shall be performed by a Geotechnical Engineer retained by the Contractor to evaluate existing structures within 1,000 feet of the blasting limits. Properties and structures in excess of 1,000 foot minimum that would be surveyed would be determined by the Contractor.

203.044 Blasting Records:

The Contractor shall keep and submit to the Engineer an accurate record of each blast. The record shall show the general location of the blast, the depth, the number of drill holes, the kind and quantity of explosive used, and other pertinent data for a complete record.

203.045 Disposal of Excavated Rock:

Excavated rock shall not be used for backfill. All excavated rock shall be disposed of by the Contractor in a manner as approved by the Engineer.

203.18 Method of Measurement:

At building entrance slab locations, the pay limit for common excavation shall be measured as a box cut 12 feet outside the foundation wall to the bottom of the foundation cushion elevation. For other building foundation areas, the pay limit for common excavation shall be measured based on a 1:1 (H:V) slope from the bottom of the foundation cushion at the outside face of the foundation wall up to the existing ground surface. Additional excavation required for the excavation of unsuitable materials below these limits or as otherwise described in the geotechnical report shall not be paid for under this item and shall be included under item 206.061 – Structural Earth Excavation.

203.19 Basis of Payment:

Unless otherwise specified in other sections, Structural Fill, Selected Fill, and Crushed Stone as specified in the Geotechnical Engineering Study shall be paid for under Item 203.29 – Selected Granular Material. No separate payment shall be made for Selected Granular

Material used in the building area or as pipe bedding/backfill. Fill within the building area as required by the geotechnical report shall be a part of the building lump sum work. Fill below the slab and footing cushion fill which is also below the two foot grub depth will be paid under Selected Granular Material as approved by the site engineer.

Geotextile fabric shown on the plans shall be incidental to all pay items.

Payment for test pits shall be full compensation for excavation, recording data, backfilling, and compaction.

Payment for filter sand shall be for full compensation for providing and installing sand bedding for the grassed underdrained soil filter liner. The impermeable membrane for the soil filter and soil filter liner shall be considered incidental to Item 203.38 and no further payment will be made.

Excavation for the soil filter and wet pond shall be paid for under item 203.20 Common Excavation. Embankment material shall be as noted on the berm construction details, and shall be paid for under item 203.25 Granular Borrow.

Dewatering of any excavation shall be incidental to the excavation pay item. Control groundwater in foundation excavations to two feet below the foundation grade as required in the Geotechnical Report for the project.

Drilling and blasting of solid rock subgrade shall be incidental to Rock Excavation pay item.

Mass rock removal and trench rock removal shall be paid under the Rock Excavation pay item. Rock and Trench rock shall be defined as solid mineral material with a volume in excess of 2 cubic yards which cannot be removed by mechanical ripping or hammering. Frozen materials are not classified as rock.

Rock pay limits for blasting will be determined on site with the Engineer, based upon the Contractor exposing the rock and sectioning. Take sections at closely spaced interval. Measure rock surface elevations to establish original level before blasting or removal occurs. Limits for width and depths dimensions shall be as specified above. All measurements for rock removal shall be verified and agreed to with the Owner/Engineer prior to the Contractor undertaking the work. Failure of the Contractor to have the quantities verified and agreed to prior to the start of blasting shall waive their right to payment. Rock pay limits for road, drive, and parking lot subgrade lines and grades will be determined from the typical sections and the proposed centerline profile and details on the Drawings. Payment shall be full compensation for furnishing all labor, materials and equipment necessary for excavation, backfilling, disposal for materials and the protection of utilities.

Preconstruction/Preblast survey and related items will be considered incidental to the related contract items and no separate payment shall be made.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
203.20	Common Excavation	Cubic Yard
203.21	Rock Excavation	Cubic Yard
203.24	Common Borrow	Cubic Yard
203.25	Granular Borrow	Cubic Yard
203.29	Selected Granular Material	Cubic Yard
203.38	Filter Sand	Cubic Yard
803.01	Test Pit	Each

SPECIAL PROVISIONS
SECTION 604 - MANHOLES, INLETS, AND CATCH BASINS

The provisions of Section 604 of the "State of Maine, Department of Transportation, Standard Specifications, Revision of March 2020" shall apply with the following additions and modifications:

604.02 Materials:

Submit Shop Drawings for each structure.

604.06 Basis of Payment:

Excavation, backfill, Couplings, Sealant, Connections of Pipe, Crushed Stone, Sand, Sediment Removal, frames, grates, covers, steps, sedimentation hoods, and all other appurtenances necessary to satisfactorily complete the work shall be considered as incidental to the cost of supplying and installing the structures.

The excavation and embankment of the stormwater treatment ponds shall be paid for as described in special provision section 203. The soil filter media for the grassed underdrained soil filter shall be paid per cubic yard in place and compacted per the plan details.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
604.077	6 Foot Diameter Catch Basin	Each
604.131	4 Foot Diameter Catch Basin	Each
604.15	4 Foot Diameter Manhole	Each
604.154	6 Foot Diameter Manhole	Each
604.1542	72 Inch Diameter Outlet Control Structure	Each
604.24	Type F Catch Basin	Each
615.20	Uncompacted Soil Filter Media	CY

SPECIAL PROVISIONS
SECTION 620 - GEOTEXTILES

The provisions of Section 620 of the "State of Maine, Department of Transportation, Standard Specifications, Revision of March 2020" shall apply with the following additions and modifications:

620.01 Description:

This section applies to furnishing and installing stabilization geotextile fabric only as directed by the on-site Engineer for the parking lot, roadway, and other areas where geotextile fabric is not shown on the plans. Geotextile fabric shown on the plans shall be incidental to the respective pay item (ie. underdrain, riprap, etc.) as per Special Provision Section 203.

620.09 Method of Measurement:

The quantity of geotextile will be measured by the number of square yards of surface area covered and in direct contact with the cover material only as directed by the on-site Engineer. Measurement will not be made for overlaps, patches and repairs of damaged geotextile unless additional overlap width is required by the Resident in which case measurement will be made for that added overlap area.

620.10 Basis of Payment:

Unless otherwise directed by the on-site Engineer, no separate payment for Geotextile Fabric will be made.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
620.54	Stabilization Geotextile	Sq. Yard

**SPECIAL PROVISION
SECTION 639 – ENGINEERING FACILITIES**

The provisions of Section 639 of the “State of Maine, Department of Transportation, Standard Specifications, Revision of March 2020” shall apply with the following additions and modifications:

639.091 Broadband Connection:

The Contractor will supply a Zoom Account for the entirety of the project to be utilized on the Owner’s Rep/Resident’s laptop/computer as necessary. Also required are the following items:

1. An HD (or better) TV that’s large enough to be viewable by everyone in the field office’s conference room.
2. An HD (or better) webcam.
3. Speakers that are audible to everyone in the field office’s conference room.
4. A conference phone or microphone system that will capture participant’s voices in the field office’s conference room.

An example of an acceptable all-in-one webcam and speaker system would be an Owl Labs Meeting Owl or Logitech MeetUp with Expansion Microphone.

Pay Item

Pay Unit

639.18 Field Office Type A

Each

SECTION 01 41 00
SPECIAL INSTRUCTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. If the Contractor discovers any ambiguity, error, omission, conflict, or discrepancy, Maine DOT Standard Specification, Division 100, Section 101- Contract Interpretations, Section 101.3.6 Priority of Conflicting Contract Documents shall control.
1. State of Maine Department of Transportation, “Standard Specifications,” Revision March 2020, and any revisions thereto, apply to this Section.
 2. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 GENERAL REQUIREMENTS

- A. Special Inspections and Structural Testing shall be in accordance with Chapter 17 of the International Building Code (2015) as referenced by the Maine Uniform Building and Energy Code (MUBEC).
- B. The program of Special Inspection and Structural Testing is a Quality Assurance program intended to ensure that the work is performed in accordance with the Contract Documents. The Special Inspections will be performed by MaineDOT/Design Engineer.
- C. The Contractor shall develop a Quality Control Plan for performing testing and inspection of materials to be fabricated as well as the installation process of the materials for the Project. This plan needs to identify the Testing Agency/Special Inspector and their qualifications for performing the Quality Control Plan required testing/inspection.
- D. The Contractor shall participate with the MaineDOT to ensure a Final Report of Special Inspections can be filed with the Building Official issuing a Certificate of Use and Occupancy.
- E. This specification section is intended to inform the Contractor of the MaineDOT/Design Engineer’s quality assurance program for Special Inspections and the extent of the Contractor’s responsibilities.

1.03 DEFINITIONS

- A. Special Inspector: The MaineDOT will engage a Professional Engineer, Testing Agency, Inspecting Agent or utilize qualified MaineDOT personnel to perform structural inspections and

coordinate and oversee the work of the other Agents. The Special Inspector if required, shall be licensed in the state where the project is located and shall have building design experience.

B. Contractor Testing/Inspecting Agency: An Agent retained by the Contractor to comply with their testing or inspection requirements of their approved Quality Control Plan. The Contractor shall coordinate their inspecting/testing requirements with the MaineDOT/Special Inspector.

C. Statement of Special Inspections: Documents prepared by the Registered Design Professional and filed with and approved by the Code Enforcement Official, listing materials and work requiring Special Inspections. The Statement of Special Inspections is located in Attachment A.

D. Schedule of Special Inspections: An itemized list of inspections, verifications, and tests (including frequency) required for the project and individuals, agencies, or firms who will be retained to perform these services. The Schedule of Special Inspections is located in Attachment A.

1.04 QUALIFICATIONS

A. The qualification of the Special Inspector, Testing Agency Agent, MaineDOT personnel or Contractor engage personnel.

B. Special Inspections shall be performed by inspectors who are either licensed Professional Engineers (P.E.), Engineer-Intern (E.I.) with an education and background in structural engineering except as indicated below.

C. Comply with the following specific requirements:

1. Special Inspections of soils and foundations may be performed by inspectors with an education and background in geotechnical engineering in lieu of a background in structural engineering.

2. Technicians performing sampling and testing of concrete shall be ACI certified Concrete Field Testing Technicians – Grade 1.

3. Inspectors performing inspections of concrete work such as inspections of concrete placement, batching, reinforcing placement, curing and protection, may be ACI certified Concrete Construction Inspectors or ICC certified Reinforced Concrete Special Inspector in lieu of being a licensed P.E, S.E. or EIT.

4. Technicians performing visual inspection of welding shall be AWS Certified Welding Inspectors or ICC certified Structural Steel and Welding Special Inspectors, technicians performing non-destructive testing such as ultrasonic testing, radiographic testing, magnetic particle testing, or dye-penetrant testing shall be certified as an ASNT-TC Level II or Level III technician.

5. Inspectors performing inspections of spray fireproofing may be ICC certified Spray Applied Fireproofing Special Inspector.

6. Technicians performing standard tests described by specific ASTM Standards shall have training in the performance of such tests and must be able to demonstrate either by oral or written examination competence for the test to be conducted. They shall be under the supervision of a licensed Professional Engineer and shall not be permitted to independently evaluate test results.

1.05 SUBMITTALS

A. The Contractor shall include the qualifications of their proposed Inspectors or Testing Agency Agent to be used to conform with their approved Quality Control Plan. Contractor to submit a Quality Control Plan for approval of all aspects of the Project and the required inspection and testing to assist in the preparation of the Final Report of Special Inspections.

B. The Contractor's engaged Agent to perform testing/inspection shall disclose any past or present business relationship or potential conflict of interest with the Contractor or any of the Subcontractors whose work will be inspected or tested.

1.06 PAYMENT

A. There is no separate payment to the Contractor for any testing or inspections required under this Section or their approved Quality Control Plan for the Project.

1.07 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall cooperate with the MaineDOT and their Special Inspector or agents so that the Special Inspections and testing may be performed without hindrance.

B. The Contractor shall review the Statement of Special Inspections to understand the required testing to be performed by the MaineDOT/Design Engineer. The Contractor shall be responsible for coordinating with the MaineDOT when the areas or materials are ready for the required inspections and tests. The Contractor shall notify the MaineDOT/Special Inspector or Testing Laboratory a minimum of least 72 hours in advance of a required inspection or test. Uninspected work that required inspection may be rejected solely on that basis.

C. The Contractor shall provide incidental labor and equipment to provide access to the work to be inspected or tested and provide assistance in obtaining any necessary samples at the site or at source of products to be tested.

D. The Special Inspection program shall in no way relieve the Contractor of their obligation to perform work in accordance with the requirements of the Contract Documents or from implementing an effective Quality Control program. All work that is to be subjected to Special Inspections shall first be reviewed by the Contractor's quality control personnel.

E. The Contractor shall review this Special Inspections section for other areas that the Contractor may have responsibilities.

F. The Contractor shall be solely responsible for construction site safety.

1.08 LIMITS ON AUTHORITY

- A. The Special Inspector or Testing/Inspecting Agencies may not release, revoke, alter, or enlarge on the requirements of the Contract Documents.
- B. The Special Inspector or Testing/Inspecting Agencies will not have control over the Contractor's means and methods of construction.
- C. The Special Inspector or Testing/Inspecting Agencies shall not be responsible for construction site safety.
- D. The Special Inspector or Testing/Inspecting Agencies have no authority to stop the work.

1.09 STATEMENT OF SPECIAL INSPECTIONS

- A. The attached Statement of Special Inspections (Attachment A), prepared by the Registered Design Professional for Structural Engineer of Record (SER), shall be submitted with the application for Building Permit. The Contractor and Subcontractors shall provide the required 'Contractor's Statement of Responsibility' and any test reports performed on the work noted.

1.10 RECORDS AND REPORTS

- A. Detailed daily reports shall be prepared of each inspection or test performed by the Contractor shall be submitted to the MaineDOT. Reports shall include the following:

1. Date of test or inspection.
2. Name of inspector or technician.
3. Location of specific areas tested or inspected.
4. Description of test or inspection and results.
5. Applicable ASTM standard.
6. Weather conditions.
7. Inspector's signature and license number, if applicable.

- B. Any discrepancies from the Contract Documents found during a Special Inspection will be reported to the Contractor as soon as possible for correction by the Contractor. If the discrepancies are not corrected, the Special Inspector shall notify the MaineDOT and Design Engineer. Reports shall document all discrepancies identified and the corrective action taken.

- C. Reports shall be submitted to the MaineDOT within 7 days of the inspection or test. Hand written reports may be submitted if final typed copies are not available.

- D. At the completion of the work requiring Special Inspections, each inspection agency and testing laboratory shall provide a statement to the MaineDOT that all work was completed in substantial

conformance with the Contract Documents and that all appropriate inspections and tests were performed.

1.11 COMMUNICATION

A. The Contractor's Testing/Inspecting Agency shall immediately notify Contractor who in turn will notify the MaineDOT as soon as possible of test results failing to comply with requirements of Contract Documents.

B. Special Inspector shall immediately notify MaineDOT and Contractor of work found to be in nonconformance with Contract Documents during inspections. If nonconforming work is not corrected while Special Inspector is on-site, Special Inspector shall notify MaineDOT & Design Engineer within 24 hours (one business day) and issue a nonconformance report. Special Inspector may use Special Inspection Non-Conformance Report form at end of this section or other similar form.

C. If nonconforming work is not corrected at time of substantial completion of structure or other appropriate time, the Contractor will be held responsible for any deals or impacts.

1.13 FINAL REPORT OF SPECIAL INSPECTIONS

A. At completion of work, each of the Contractor's Testing/Inspecting Agencies shall submit a Final Report of inspections/testing performed and stating work was completed in substantial conformance with Contract Documents and appropriate inspections and tests were performed. Contractor's Testing/Inspecting Agencies may use Agent's Final Report of Special Inspections form provided at end of this section or other similar form.

B. At completion of work, Special Inspector shall compile inspection and test reports generated by the MaineDOT, Design Engineer and the Contractor's agents into a Final Report of Special Inspections. Final Report of Special Inspections shall state required inspections have been performed and itemize nonconforming work not corrected or resolved.

C. Contractor may use Final Report of Special Inspections form provided (Attachment A) or other similar form.

D. Special Inspector shall submit Final Report of Special Inspections to MaineDOT, Contractor and Design Engineer and to the Code Enforcement Official prior to issuance of a Certificate of Use and Occupancy.

END OF SECTION 01 41 00

SECTION 04 70 00

STONE MASONRY VENEER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Stone masonry anchored to backup.
 - 2. Stone sills.

1.3 SUBMITTALS

- A. Product Data: For each variety of stone, stone accessory, and manufactured product.
- B. Samples for Initial Selection: For colored mortar and other items involving color selection.
- C. Samples for Verification:
 - 1. For each stone type indicated. Include at least five Samples in each set and show the full range of color and other visual characteristics in completed Work.
 - 2. For each color of mortar required. Label Samples to indicate types and amounts of pigments used.
- D. Material Test Reports:
 - 1. Stone Test Reports: For each stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, other than abrasion resistance, according to referenced ASTM standards. Base reports on testing done within previous three years.
 - 2. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer indicating that sealants will not stain or damage stone. Include interpretation of test results and recommendations for primers and substrate preparation needed for adhesion.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs experienced stonemasons and stone fitters.
- B. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Build mockups for typical exterior wall in sizes as indicated on Drawings,

including face and backup wythes and accessories.

- a. Include through-wall flashing installed for a 24-inch (600-mm) length in corner of mockup approximately 16 inches (400 mm) down from top of mockup, with a 12-inch (300-mm) length of flashing left exposed to view (omit stone masonry above half of flashing).
2. Protect accepted mockups from the elements with weather-resistant membrane.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- C. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.6 FIELD CONDITIONS

- A. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed stone masonry when construction is not in progress.
 1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.
- B. Stain Prevention: Immediately remove mortar and soil to prevent them from staining stone masonry face.
 1. Protect base of walls from rain-splashed mud and mortar splatter using coverings spread on the ground and over the wall surface.
 2. Protect sills, ledges, and projections from mortar droppings.
 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at end of each day to prevent rain from splashing mortar and dirt on completed stone masonry.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than seven days after completing cleaning.

- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1.7 COORDINATION

- A. Advise installers of other work about specific requirements for placement of reinforcement, veneer anchors, flashing, and similar items to be built into stone masonry.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single source with resources to provide materials of consistent quality in appearance and physical properties.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of uniform quality for each cementitious component from single manufacturer and each aggregate from single source or producer.

2.2 GRANITE

- A. Material Standard: Comply with ASTM C 615.
- B. Regional Materials: Stone shall be fabricated within 500 miles (800 km) of Project site from stone that has been extracted within 500 miles (800 km) of Project site.
- C. Description: Provide Granite Fieldstone (Granite, Quartzite and Mica) with varied color; as approved by Architect.
- D. Varieties and Sources: Subject to compliance with requirements, provide the following:
 - 1. Provide the Boston Blend by Stonetard.com or approved equal. Stone shall be **rectangular ashlar shape without ledgestones.** ~~a mixture of Ashlar with Ledgestones selected by Architect.~~
 - 2. Thickness shall be 1 in. at interior locations; 4 in. at exterior locations.

2.3 STONE SILLS

- A. **Material: Cut natural bluestone without veining, with honed finish. Uniform color as approved by Architect. Set with stainless steel dowel anchors, minimum 2 per stone.**

2.4 MORTAR MATERIALS

- A. Regional Materials: Aggregate for mortar and grout, cement, and lime shall be extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.
- B. Portland Cement: ASTM C 150, Type I or Type II, except Type III may be used for cold-

weather construction; natural color or white cement may be used as required to produce mortar color indicated.

- C. Hydrated Lime: ASTM C 207, Type S.
- D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in stone masonry mortar.
 - 1. Products: Subject to compliance with requirements, provide one of the following]:
 - a. Davis Colors; True Tone Mortar Colors.
 - b. Lanxess Corporation; Bayferrox Iron Oxide Pigments.
 - c. Solomon Colors; SGS Mortar Colors.
- E. Aggregate: ASTM C 144 and as follows:
 - 1. For pointing mortar, use aggregate graded with 100 percent passing No. 16 (1.18-mm) sieve.
 - 2. White Aggregates: Natural white sand or ground white stone.
- F. Water: Potable.

2.5 VENEER ANCHORS

- A. Materials:
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 1064/A 1064M; with ASTM A 153/A 153M, Class B-2.
 - 2. Hot-Dip Galvanized-Steel Sheet: ASTM A 1008/A 1008M, cold-rolled, carbon-steel sheet, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M, Class B-2.
- B. Size: Sufficient to extend at least halfway, but not less than 1-1/2 inches (38 mm), through stonemasonry and with at least a 5/8-inch (16-mm) cover on exterior face.
- C. Adjustable, Screw-Attached Veneer Anchors: Units consisting of a wire tie section and a metal anchor section that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 213.
 - b. Wire-Bond; RJ-711.
 - 2. Structural Performance Characteristics: Capable of withstanding a 100-lbf (445-N) load in both tension and compression without deforming or developing play in excess of 0.05 inch (1.3 mm).

2.6 EMBEDDED FLASHING MATERIALS

- A. Flexible Flashing: For flashing unexposed to the exterior, use[one of] the following unless otherwise indicated:
 - 1. Copper-Laminated Flashing: 5-oz./sq. ft. (1.5-kg/sq. m) copper sheet bonded with asphalt between two layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
 - 2) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
 - 3) York Manufacturing, Inc.; York Copper Fabric Flashing.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degradewithin the wall cavity.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Advanced Building Products Inc.; Mortar Break.
 - b. CavClear/Archovations, Inc.; CavClear Masonry Mat.
 - c. Mortar Net USA, Ltd.; Mortar Net.

2.8 FABRICATION

- A. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated.
 - 1. For granite, comply with recommendations in NBGQA's "Specifications for ArchitecturalGranite."
- B. Thickness of Stone: Provide thickness indicated.
- C. Finish exposed stone faces and edges to comply with requirements indicated for finish and to match approved samples and mockups.

2.9 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride.
 - 2. Use portland cement-lime mortar unless otherwise indicated.

3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar for Stone Masonry: Comply with ASTM C 270, Proportion Specification.
 1. Mortar for Setting Stone: Type S.
 2. Mortar for Pointing Stone: Type N.
- C. Pigmented Mortar: Select and proportion pigments with other ingredients to produce color required.
 1. Pigments shall not exceed 10 percent of portland cement by weight.
 2. Mix to match Architect's sample.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive stone masonry, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone masonry.
- B. Examine substrate to verify that dovetail slots, inserts, reinforcement, veneer anchors, flashing, and other items installed in substrates and required for or extending into stone masonry are correctly installed.
- C. Examine wall framing, sheathing, and weather-resistant sheathing paper to verify that stud locations are suitable for spacing of veneer anchors and that installation will result in a weatherproof covering.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SETTING STONE MASONRY

- A. Perform necessary field cutting and trimming as stone is set.
 1. Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edges eased slightly to prevent snipping.
 2. Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.
- B. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
- C. Arrange stones in pattern as indicated.
- D. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.

- E. Set stone to comply with requirements indicated on Drawings. Install supports, fasteners, and other attachments indicated or necessary to secure stone masonry in place. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
- F. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any.
- G. Provide sealant joints of widths and at locations indicated.
 - 1. Keep sealant joints free of mortar and other rigid materials.
 - 2. Sealing joints is specified in Section 079200 "Joint Sealants."
- H. Install embedded flashing at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- I. Place weep holes and vents in joints where moisture may accumulate, including at base of cavity walls, above shelf angles, and at flashing.
 - 1. Use open head joints to form weep holes.
 - 2. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

3.3 INSTALLATION OF ANCHORED STONE MASONRY

- A. Anchor stone masonry to back-up with veneer anchors unless otherwise indicated.
- B. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 inches (38 mm), through stone masonry and with at least a 5/8-inch (16-mm) cover on exterior face.
- C. Space anchors to provide not less than one anchor per 2 sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (300 mm) of openings, sealant joints, and perimeter at intervals not exceeding 12 inches (300 mm).
- D. Set stone in full bed of mortar with full head joints unless otherwise indicated. Build anchors into mortar joints as stone is set.
- E. Rake out joints for pointing with mortar to depth of not less than 1/2 inch (13 mm) before setting mortar has hardened. Rake joints to uniform depths with square bottoms and clean sides.

3.4 POINTING

- A. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply pointing mortar in layers not more than 3/8 inch (10 mm) deep until a uniform depth is formed.
- B. Point stone joints by placing and compacting pointing mortar in layers of not more than

3/8 inch(10 mm) deep. Compact each layer thoroughly and allow to it become thumbprint hard before applying next layer.

- C. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce the following joint profile:

1. Joint Profile: Concave.

3.5 ADJUSTING AND CLEANING

- A. Remove and replace stone masonry of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
2. Defective joints.
3. Stone masonry not matching approved samples and mockups.
4. Stone masonry not complying with other requirements indicated.

- B. Replace in a manner that results in stone masonry matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.

- C. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.

- D. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning stone masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Clean stone masonry by bucket and brush hand-cleaning method described in BIA Technical Note No. 20, Revised II, using job-mixed detergent solution.

PART 4 - PAYMENT PROCEDURES

4.1 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments. Payment shall be based on percentage of work completed and cost of materials and equipment.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work

- completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before lastday of construction period covered by application.
- B. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

END OF SECTION

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SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. If the Contractor discovers any ambiguity, error, omission, conflict, or discrepancy, Special Provision Section 10 1. 3.6 Priority of Conflicting Contract Documents shall control.
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
 2. State of Maine Department of Transportation, "Standard Specifications," Revision December 2002, and any revisions thereto, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
1. Framing with dimension lumber.
 2. Wood blocking and nailers including for attaching miscellaneous finish items (millwork, accessories, draperies, headboards, etc.).
 3. Framing with engineered wood products.
 4. Wood furring.
 5. Utility shelving.
 6. Plywood backing panels.
 7. **Fire-retardant treated plywood floor at mezzanine.**
- B. Related Sections include the following:
1. Division 6 Section "Sheathing."

1.03 DEFINITIONS

- A. Exposed Framing: Framing not concealed by other construction.
- B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- C. Lumber grading agencies, and the abbreviations used to reference them, include the following:
1. NeLMA: Northeastern Lumber Manufacturers' Association.
 2. NLGA: National Lumber Grades Authority.
 3. SPIB: The Southern Pine Inspection Bureau.

1.04 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 3. For fire-retardant treatments specified to be High-Temperature (HT) type, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.
- C. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- D. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
1. Wood-preservative-treated wood.
 2. Fire-retardant-treated wood.
 3. Engineered wood products.
 4. Power-driven fasteners.
 5. Powder-actuated fasteners.
 6. Expansion anchors.
 7. Metal framing anchors.

1.05 QUALITY ASSURANCE

- A. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.01 WOOD PRODUCTS: GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
 - 3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 4. Provide dressed lumber, S4S, unless otherwise indicated.

2.02 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWA C2.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Kiln-dry lumber after treatment to a maximum moisture content of nineteen percent (19%). Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
 - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.03 DIMENSION LUMBER FRAMING

- A. Maximum Moisture Content: Nineteen percent (19%) for 2-inch nominal thickness or less.
- B. Pressure Treated Lumber: Construction or No. 2 grade Southern yellow Pine.
- C. Framing Lumber: Construction or No. 2 grade or better kiln dried spruce-pine-fir or douglas fir-larch.
- D. Bridging, Bracing, and Blocking: Construction or No 2 grade or better kiln dried spruce-pine- fir or douglas fir-larch.

2.04 ENGINEERED WOOD PRODUCTS

- A. Engineered Wood Products, General: Products shall contain no urea formaldehyde.
- B. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.
- C. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Boise Cascade Corporation.
 - b. Georgia-Pacific.
 2. Extreme Fiber Stress in Bending, Edgewise: 2900 psi for 12-inch nominal-member depth.
 3. Modulus of Elasticity, Edgewise: 1,800,000 psi.
- D. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Louisiana-Pacific Corporation.
 - b. Weyerhaeuser Company.
2. Extreme Fiber Stress in Bending, Edgewise: 2900 psi for 12-inch nominal-member depth.
 3. Modulus of Elasticity, Edgewise: 2,200,000 psi.
- E. Wood I-Joists: Prefabricated units, I-shaped in cross section, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Provide units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Boise Cascade Corporation.
 - b. Georgia-Pacific.
 - c. International Paper Corporation.
 - d. Weyerhaeuser Company.
 2. Web Material: Either oriented strand board or plywood, complying with DOC PS 1 or DOC PS 2, Exposure 1.
 3. Structural Properties: Provide units with depths and design values not less than those indicated.
 4. Provide units complying with APA PRI-400, factory marked with APA trademark indicating nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.
- F. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists.
1. Manufacturer: Provide products by same manufacturer as I-joists.
 2. Material: All-veneer product.
 3. Thickness: 1-1/8 inches.
 4. Provide performance-rated product complying with APA PRR-401, rim board grade, factory marked with APA trademark indicating thickness, grade, and compliance with APA standard.

2.05 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
 2. Nailers.
 3. Furring.
 4. Grounds.
 5. Utility shelving.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with

nineteen percent (19%) maximum moisture content of any species.

- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.06 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.07 PLYWOOD FLOORING PANELS

- A. **Flooring at Mezzanine: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.**

2.08 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six (6) times the load imposed when installed in unit masonry assemblies and equal to four (4) times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B

633, Class Fe/Zn 5.

2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.09 METAL FRAMING ANCHORS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated on Drawings or comparable products by one (1) of the following:
 1. Simpson Strong-Tie Co., Inc.
 2. USP Structural Connectors.
- C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- D. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation.
 1. Use for interior locations where stainless steel is not indicated.
- E. Stainless-Steel Sheet: ASTM A 666, Type 304.
 1. Use for exterior locations and where indicated.
- F. Joist Hangers: U-shaped joist hangers with 2-inch-long seat and 1-1/4-inch-flanges at least eighty-five percent (85%) of joist depth.

wide nailing

- G. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
 1. Strap Width: 2 inches
 2. Thickness: 0.050 inch
- H. Bridging: Rigid, V-section, nailless type, 0.050 inch thick, length to suit joist size and spacing.
- I. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch above base and with 2-inch-minimum side cover, socket 0.062 inch thick, and standoff and adjustment plates 0.108 inch thick.
- J. Rafter Tie-Downs: Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-1/2 inches wide by 0.050 inch thick. Tie fastens to side of rafter or truss, face of top

plates, and side of stud below.

- K. Floor-to-Floor Ties: Flat straps, with holes for fasteners, for tying upper floor wall studs to band joists and lower floor studs, 1-1/4 inches wide by 0.050 inch thick by 36 inches long.
- L. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two (2) bolts placed seven (7) bolt diameters from reinforced base. See shear wall schedule on drawings.

2.10 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.
 - 1. Use adhesives that have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chlorpyrifos as its active ingredient.

PART 3 - EXECUTION

3.01 INSTALLATION: GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
- E. Do not splice structural members between supports, unless otherwise indicated.
- F. Provide blocking and framing as indicated and as required to support facing materials,

fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

G. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal-thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than partitions.

100 sq. ft.

and to solidly fill space below

4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.

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

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

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

J. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

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

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

1. Comply with approved fastener patterns where applicable.
2. Use finishing nails, unless otherwise indicated.

3.02 WOOD SLEEPER, BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.03 WOOD FURRING INSTALLATION

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal-size furring at 24 inches o.c.
- C. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal-size furring vertically at 16 inches o.c.

3.04 FLOOR JOIST FRAMING INSTALLATION

- A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches of bearing on wood or metal, or 3 inches on masonry. Attach floor joists as follows:
 - 1. Where supported on wood members, by using metal framing anchors.
 - 2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.
- B. Fire Cuts: At joists built into masonry, bevel cut ends 3 inches and do not embed more than 4 inches.
- C. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches.
- D. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches from top or bottom.
- E. Provide solid blocking of 2-inch nominal thickness by depth of joist at ends of joists unless nailed to header or band.
- F. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches or securely tie opposing members together. Provide solid blocking of 2-inch nominal thickness by depth of joist over supports.
- G. Anchor members paralleling masonry with 1/4-by-1-1/4-inch metal strap anchors spaced

not more than 96 inches o.c., extending over and fastening to three joists. Embed anchors at least 4 inches into grouted masonry with ends bent at right angles and extending 4 inches beyond bend.

- H. Provide solid blocking between joists under jamb studs for openings.
- I. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.
 - 1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.
- J. Provide bridging of type indicated below, at intervals of 96 inches o.c., between joists.
 - 1. Diagonal wood bridging formed from bevel-cut, double-crossed and nailed at both ends to joists.

1-by-3-inch nominal-
size lumber,

- 2. Steel bridging installed to comply with bridging manufacturer's written instructions.

3.05 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

PART 4 - PAYMENT PROCEDURES

4.01 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments. Payment shall be based on percentage of work completed and cost of materials and equipment.
 - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- B. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 - 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent

- of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

END OF SECTION 06 10 00

SECTION 061516
WOOD ROOF DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-sawn wood roof decking.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for dimension lumber items associated with wood roof decking.

1.2 ACTION SUBMITTALS

- A. Samples: 24 inches long, showing the range of variation to be expected in appearance of wood roof decking.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery of wood roof decking to avoid extended on-site storage and to avoid delaying the Work.
- B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings. Stack wood roof decking with surfaces that are to be exposed in the final Work protected from exposure to sunlight.

PART 2 - PRODUCTS

2.1 WOOD ROOF DECKING, GENERAL

- A. General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.

2.2 SOLID-SAWN WOOD ROOF DECKING

- A. Standard for Solid-Sawn Wood Roof Decking: Comply with AITC 112.
- B. Roof Decking Species:

1. Doug fir-larch (North), Hem-fir (North), or Southern Pine.
- C. Roof Decking Nominal Size: 3 by 6.
- D. Roof Decking Grade:
 1. Dense Standard Decking.
- E. Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that are not exposed to view.
- F. Moisture Content: Provide wood roof decking with 19 percent maximum moisture content at time of dressing.
- G. Face Surface: Smooth.
- H. Edge Pattern: Vee grooved.

2.3 ACCESSORY MATERIALS

- A. Fasteners for Solid-Sawn Roof Decking: Provide fastener size and type complying with AITC 112 for thickness of deck used.
- B. Nails: Common; complying with ASTM F1667, Type I, Style 10.
- C. Spikes: Round; complying with ASTM F1667, Type III, Style 3.
- D. Fastener Material: Hot-dip galvanized steel.
- E. Sealants: Latex, complying with applicable requirements in Section 079200 "Joint Sealants" and recommended by sealant manufacturer and manufacturer of substrates for intended application.
- F. Penetrating Sealer: Clear sanding sealer complying with Section 099300 "Staining and Transparent Finishing" and compatible with topcoats specified for use over it.

2.4 FABRICATION

- A. Shop Fabrication: Where preservative-treated roof decking is indicated, complete cutting, trimming, surfacing, and sanding before treating.
- B. Predrill roof decking for lateral spiking to adjacent units to comply with AITC 112.
- C. Seal Coat: After fabricating and surfacing roof decking, apply a saturation coat of penetrating sealer.
- D. Apply indicated finish materials to comply with Section 099300 "Staining and Transparent Finishing" in fabrication shop.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and support framing in areas to receive wood roof decking for compliance with installation tolerances and other conditions affecting performance of wood roof decking.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install solid-sawn wood roof decking to comply with AITC 112.
 - 1. Locate end joints for two-span continuous lay-up.
 - 2. Nail each course of wood roof decking at each support with one nail slant nailed above the tongue and one nail straight nailed through the face.
 - a. Use 30d nails for 3-by-6 and 3-by-8 roof decking.
 - 3. Slant nail each course of wood roof decking to the tongue of the adjacent course at 30 inches o.c. and within 12 inches of the end of each unit. Stagger nailing 15 inches in adjacent courses.
 - a. Use 8d nails for 3-by-6 and 3-by-8 roof decking.
- B. Anchor wood roof decking, where supported on walls, with bolts as indicated.
- C. Apply joint sealant to seal roof decking at exterior walls at the following locations:
 - 1. Between roof decking and supports located at exterior walls.
 - 2. Between roof decking and exterior walls that butt against underside of roof decking.
 - 3. Between tongues and grooves of roof decking over exterior walls and supports at exterior walls.

3.3 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged roof decking if repairs are not approved by Architect.

3.4 PROTECTION

- A. Provide water-resistive barrier over roof decking as the Work progresses to protect roof decking until roofing is applied.
- B. If, despite protection, inorganic boron (SBX)-treated roof decking becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061516

SECTION 07 31 29

WOOD SHINGLE SIDING

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Provide wood shingle siding as indicated on the Drawings and as specified herein.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's printed product data, specifications, standard details, installation instructions, use limitations and recommendations for each material used. Provide certifications that materials and systems comply with specified requirements.
- B. Initial Selection Samples: Submit samples showing complete range of colors, textures, and finishes available for each material used.
- C. Verification Samples: Submit representative samples of each material that is to be exposed in the completed work. Show full color ranges and finish variations expected. Provide samples having minimum size of 144 sq. in.

1.3 QUALITY ASSURANCE

- A. Source: For each material type required for the work of this section, provide primary materials which are the product of one manufacturer. Provide secondary or accessory materials which are acceptable to the manufacturers of the primary materials.
- B. Mock-Ups: Prior to commencing the primary work of this section, provide mock-ups at locations acceptable to Architect. Obtain Architect's acceptance of visual qualities. Protect and maintain accepted mock-ups throughout the remainder of the work of this section to serve as criteria for acceptance of the work. Approved mock-ups may be incorporated into the finished work.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's unopened, labeled containers.
- B. Store materials to avoid water damage, and store rolled goods on end. Comply with manufacturer's recommendations for job-site storage and protection.

1.6 JOB CONDITIONS

- A. Substrate: Proceed with shingle work only after substrate construction and penetrating work have been completed.
- B. Weather Conditions: Proceed with shingle work only when weather conditions are consistent with manufacturer's recommendations and when substrate is completely dry.

PART 2 PRODUCTS

2.1 WOOD SHINGLES

- A. Cedar Wall Shingles: Rebutted and rejointed, smooth-sawn eastern white cedar shingles.
 - 1. Grade: Wall Grade.
 - 3. Size: 18 inches (455 mm) long; 0.45 inch (11 mm) thick at butt.
- B. Cedar Wall Shingle Finish: **One coat, Cabot Clear Weather Protector or equal by Thompson's or Valspar. Apply after installation.** ~~Un-finished.~~

2.2 FASTENERS

- A. Nails: Aluminum or stainless steel, 11 or 12-gage sharp pointed conventional roofing nails with barbed shanks, minimum 3/8 in. diameter head, and of sufficient length to penetrate minimum 3/4 in. into solid decking or to penetrate through sheathing.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine substrate and conditions under which shingling work is to be performed and notify Architect in writing of unsatisfactory conditions. Do not proceed with shingling work until unsatisfactory conditions have been corrected in manner acceptable to installer.

3.2 PREPARATION OF SUBSTRATE

- A. Clean sheathing of projections and substances detrimental to shingling work.
- B. Coordinate installation of shingles with flashing, waterproof membrane, and other adjoining work to ensure proper sequencing. Do not install shingles until all penetrations through walls have been installed and are securely fastened against movement.

3.3 INSTALLATION

- A. Shingles: Fasten shingles in manufacturer's recommended pattern, weather exposure and number of fasteners per shingle. Use horizontal and vertical chalk lines to ensure straight coursing. Comply with installation details and recommendations of shingle manufacturer.

3.4 EXTRA STOCK

- A. Provide minimum of 2% of installed quantity of each type of shingle used in the work. Provide in unopened clearly labeled bundles or containers.

PART 4 - PAYMENT PROCEDURES

4.1 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments. Payment shall be based on percentage of work completed and cost of materials and equipment.
1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- B. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

END OF SECTION

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SECTION 08 80 00

GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- 1. Glass for doors, interior borrowed lites, and glazed curtain walls.
- 2. Glass mirrors.
- 3. Glazing sealants and accessories.

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. IBC: International Building Code.
- D. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review temporary protection requirements for glazing during and after installation.

1.6 SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.

- C. Glazing Accessory Samples: For sealants, in 12-inch (300-mm) lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.
 - D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
 - E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- 1.7 INFORMATIONAL SUBMITTALS
- A. Qualification Data: For Installer.
 - B. Product Certificates: For glass.
 - C. Product Test Reports: For insulating glass and glazing sealants, for tests performed by a qualified testing agency.
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
 - D. Preconstruction adhesion and compatibility test report.
 - E. Sample Warranties: For special warranties.
- 1.8 QUALITY ASSURANCE
- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
 - B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
 - C. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- 1.9 PRECONSTRUCTION TESTING
- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
 - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 - 1. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 - 2. Test no fewer than eight Samples of each type of material, including joint

- substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
- 3. Schedule enough time for testing and analyzing results to prevent delaying the Work.
- 4. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.11 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.12 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 - 1. Warranty Period: Five years from date of Substantial Completion.
- C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written

instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interiorsurfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Cardinal Glass Industries.
2. Oldcastle BuildingEnvelope.
3. Pilkington North America Inc.
4. Vitro Architectural Glass.
5. Saint-Gobain Corporation.
6. Viracon, Inc.

- B. Source Limitations for Glass: Obtain from single source from single manufacturer for eachglass type.

1. Obtain tinted glass from single source from single manufacturer.
2. Obtain reflective-coated glass from single source from single manufacturer.

- C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets toremain watertight and airtight; deterioration of glazing materials; or other defects in construction.

- B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.

1. Design Wind Pressures: As indicated on Drawings.
2. Design Wind Pressures: Determine design wind pressures applicable to Project accordingto ASCE/SEI 7, based on heights above grade indicated on Drawings.

- a. Wind Design Data: As indicated on Drawings.
- b. Basic Wind Speed: 110 mph (49 m/s).

3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.

- C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with16 CFR 1201, Category II.

- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites 6 mm thick].
 2. For laminated-glass lites, properties are based on products of construction indicated.
 3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as $\text{Btu/sq. ft.} \times \text{h} \times \text{deg F} (\text{W/sq. m} \times \text{K})$.
 5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. GANA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
 2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
 3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
 4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
1. Minimum Glass Thickness for Exterior Lites: 6 mm.
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.
- B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- C. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.5 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.
 - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 - 3. Interlayer Color: Clear unless otherwise indicated.

2.6 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by dehydrated interspace, qualified according to ASTM E 2190.
 - 1. Sealing System: Dual seal, with polyisobutylene and silicon primary and secondary sealants.
 - 2. Spacer: Thermally broken aluminum.
 - 3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 SILVERED FLAT GLASS MIRRORS

- A. Mirrors, General: ASTM C 1503.
- B. Annealed Monolithic Glass Mirrors: Mirror Select Quality, clear.
 - 1. Nominal Thickness: 6.0 mm.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

- D. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.
- E. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Franklin International.
 - b. H.B. Fuller.
 - c. Laurence, C. R. Co., Inc.
 - d. Liquid Nails Adhesive.
 - e. Palmer Products Corporation.
 - 2. Adhesive shall have a VOC content of 70 g/L or less.

2.8 MIRROR HARDWARE

- A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.
 - 1. Bottom and Side Trim: J-channels formed with front leg and back leg not less than 3/8 and 7/8 inch (9.5 and 22 mm) in height, respectively, and a thickness of not less than 0.04 inch (1.0 mm).
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Andscot Company, Inc.
 - 2) Laurence, C. R. Co., Inc.
 - 3) Stylmark, Inc.
 - 2. Top Trim: J-channels formed with front leg and back leg not less than 5/8 and 1 inch (16 and 25 mm) in height, respectively, and a thickness of not less than 0.04 inch (1.0 mm).
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Andscot Company, Inc.
 - 2) Laurence, C. R. Co., Inc.
 - 3) Stylmark, Inc.
 - 3. Finish: Clear bright anodized.

2.9 GLAZING SEALANTS

- A. General:
1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. Field-applied sealants shall have a VOC content of not more than 250 g/L.
 4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 790.
 - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
 - c. Sika Corporation U.S.; Sikasil WS-290.
 - d. Tremco Incorporated; Spectrem 1.
- C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 791.
 - b. GE Advanced Materials - Silicones; Contractors N SCS1800.
 - c. Sika Corporation U.S.; Sikasil WS-295.
 - d. Tremco Incorporated; Spectrem 2.

2.10 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.11 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.12 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 2. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and

according to requirements in referenced glazing publications.

- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and

pressure- glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 MIRROR INSTALLATION

- A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
 - 1. GANA Publications: "Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."
- B. Provide a minimum airspace of 1/8 inch (3 mm) between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.
- C. Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.
 - 1. Aluminum J-Channels: Provide setting blocks 1/8 inch (3 mm) thick by 4 inches (100 mm) long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch (6.4 mm) wide by 3/8 inch (9.5 mm) long at bottom channel.
 - 2. Install mastic as follows:
 - a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
 - b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
 - c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch (3 mm) between back of mirrors and mounting surface.

3.8 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.9 LAMINATED GLASS SCHEDULE

- A. Clear laminated glass with two plies of annealed float glass.
 - 1. Minimum Thickness of Each Glass Ply: As indicated.
 - 2. Interlayer Thickness: 0.030 inch (0.76 mm).
 - 3. Safety glazing required.

3.10 GLASS SCHEDULE

- A. Glass Type GL-1: Low-E-coated, Tinted insulating glass.
 - 1. Overall Unit Thickness: 1 inch (25 mm).
 - 2. Minimum Thickness of Each Glass Lite: 6 mm.
 - 3. Outdoor Lite: Annealed or Fully tempered glass as indicated.
 - 4. Interspace Content: Air.
 - 5. Indoor Lite: Annealed or Fully tempered glass as indicated.
 - 6. Low-E Coating: Pyrolytic on second surface.
 - 7. Winter Nighttime U-Factor: .45 maximum.
 - 8. Summer Daytime U-Factor: .45 maximum.
 - 9. Solar Heat Gain Coefficient: .40 maximum.
 - 10. **Tint: Grey**
 - 11. **Shading Coefficient: 0.45 minimum.**
- B. Glass Type GL-2: Same as GL-1, except with Bird Glass.
- C. Glass Type GL-3: ½ in. tempered.
- D. Glass Type GL-4: ¼ in. laminated.

SECTION 26 31 00**PHOTOVOLTAIC COLLECTORS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
 - 1. Rooftop mounted photovoltaic (PV) collectors and supports.
- B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
 - 1. Section 074113 "Standing-Seam Metal Roof Panels" for substrate.

1.3 DESIGN CRITERIA

- A. A 57kW, 208V, 3-phase stand-alone photovoltaics (PV) system shall be furnished and installed on the roof of the Acadia Gateway Facility. The PV system and equipment (modules, framing, combiners, inverters, DC disconnects, surge protection) shall comply with UL 1703 and 1741, Solar Rating and Certification Corporation 100, International Electrotechnical Commission 60891 and 60904 requirements, and shall be designed, built, commissioned and fully operatively connected to the electrical facility power distribution system per the local Authority Having Jurisdiction (AHJ) and latest version of the NEC standards for electrical installations.
- B. The PV system shall provide auxiliary AC power into the facility main distribution panel when solar energy is available. The PV system shall be capable of immediately disconnecting from the utility grid upon loss of grid power to the service in accordance with IEEE 1547 and local utility regulations. The PV system shall be rated at a minimum 57kW AC at 480V as indicated on the plans and calculations. The system shall be properly grounded and bonded to the electrical grounding system in accordance with NEC requirements. Other performance requirements are as follows:
 - 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. Seismic Qualification Certificates: For accessories, and components, from manufacturer.

- a. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
- b. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
- c. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

1.4 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for PV panels.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
3. Include documentation and forms as required by the local utility company.

B. Shop Drawings: For PV modules.

1. Include plans, elevations, sections, and mounting details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Detail fabrication and assembly.
4. Include diagrams for power, signal, and control wiring.

C. Sample Warranty: For manufacturer's special materials and workmanship warranty and minimum power output warranty.

D. Operation and Maintenance Data: For PV modules to include in operation and maintenance manuals.

1.5 WARRANTY

A. Manufacturer's Special Materials and Workmanship Warranty: Manufacturer agrees to repair or replace components of PV modules that fail in materials or workmanship within specified warranty period.

1. Manufacturer's materials and workmanship warranties include, but are not limited to, the following:
 - a. Faulty operation of PV modules.
 - b. Failure of attachment of PV modules.

2. Warranty Period: Two years from date of Substantial Completion.

B. Manufacturer's Special Minimum Power Output Warranty: Manufacturer agrees to repair or replace components of PV modules that fail to exhibit the minimum power output within

specified warranty period. Special warranty, applying to modules only, applies to materials only, on a prorated basis, for period specified.

1. Manufacturer's minimum power output warranties include, but are not limited to, the following warranty periods, from date of Substantial Completion:
 - a. The PV system manufacturer shall provide a warranty for the components of the PV system for a period of 10 years, along with a special minimum power output warranty to 80% for a period of 25 years.

PART 2 - PRODUCTS

2.1 PV MODULES

- A. The modules shall be constructed of a technology, with greater than 15% efficiency. PV modules shall be in compliance with the glare requirement of FAA 14 CFR part 77 "Objects Affecting Airspace", which requires the PV modules to be low-reflectivity, with a reflective factor not greater than 2 percent of direct light according with ISO 9050 norms. The modules and sub-components shall be the product of one manufacturer.
- B. The PV modules shall be flush-mounted on one side of the pitched the roof surface, utilizing 18-8 #304 stainless steel mounting hardware. The racking must be suitable for Wind Category and/or Seismic Design Category for the installation locale and as defined by ASCE 7. The Contractor shall furnish all wind load and seismic design calculations for review.

2.2 INVERTERS

- A. The PV central inverters shall be NEMA 3R type, wall-mounted, have pulse-width-modulation control, and with anti-islanding protection to prevent reverse-feeding inverter generated power to the utility grid in the event of a utility outage. The inverter shall have a standard LCD display with On/Off toggle switch. The inverters shall have overcurrent and ground fault protection, arc fault circuit interrupter, and rapid shutdown in accordance with NEC requirements. They shall have self-diagnostics routines, remote and local operating status display, and remote monitoring capabilities.

2.3 WIRING

- A. PV wiring shall be installed in raceways in compliance with UL 4703 shall be copper, type USE-2 or RHW-2, 600V cable with locking type connectors and sunlight-resistant when exposed to sunlight.
- B. The PV system manufacturer shall provide a warranty for the components of the PV system for a period of 10 years, along with a special minimum power output warranty to 80% for a period of 25 years.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Do not begin installation until mounting surfaces have been properly prepared.
- C. If preparation of mounting surfaces is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- D. Examine modules and array frame before installation. Reject modules and arrays that are wet, moisture damaged, or mold damaged.
- E. Examine roofs, supports, and supporting structures for suitable conditions where PV system will be installed.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply. Coordinate with requirements of Division 07 Roofing and Flashing Sections. Maintain the waterproof integrity of the roof systems.
- B. Installation shall comply with NECA 1. Coordinate layout and installation of PV panels with roof assembly and other construction.
- C. Support PV panel assemblies independent of supports for other elements such as roof and support assemblies, enclosures, vents, pipes, and conduits. Support assembly to prevent twisting from eccentric loading. Install PV system components in locations indicated on Drawings. Install weatherseal fittings and flanges where PV panel assemblies penetrate exterior elements such as walls or roofs. Seal around openings to make weathertight. Bundle, lace, and train wiring within enclosures to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.
- D. Coordinate PV panel cabling to equipment enclosures to ensure proper connections. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B. Make splices, terminations, and taps that are compatible with conductor material.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

- B. PV module will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

PART 4 – COMPENSATION

4.01 METHOD OF MEASUREMENT

- A. The PV System will be measured as a lump sum (LS) payment item, complete-in-place as approved by the Owner’s Representative and as per the Contract Documents.

4.02 BASIS OF PAYMENT

- A. The basis for payment on the PV System shall be lump sum. Payment shall include all materials, equipment, and labor necessary for furnishing, loading, delivering, installing, and testing of the System, and other incidental labor materials, and equipment necessary to complete the work.

4.03 PAYMENT ITEMS

655.40 Photovoltaic System LS

END OF SECTION