Agenda
Board of Selectmen's Meeting
Town of Damariscotta, Maine
February 3, 2021; 5:30 PM
Meeting to be held remotely via Zoom

Join Zoom Meeting

https://us02web.zoom.us/j/83395939395

Meeting ID: 833 9593 9395
Passcode: BOS

I. Pledge of Allegiance

II. Call to Order

III. Minutes
1. January 20 Meeting

IV. Financial Reports
1. Payroll Warrant
2. Accounts Payable Warrants

V. Presentations

VI. Citizen Comments and General Correspondence

VII. Town Manager Items
1. Update on Municipal Parking Lot Sewer Line Project
2. Waterfront Project Update
3. Draft Solar Energy Systems Ordinance

VIII. Official Action Items
1. Date, Time and Location for Annual Town Meeting (Tabled from January 20 Meeting)
2. Appointment to Budget Committee
3. Appointment to Planning Board Alternate Position
4. Request for Proposals for Vine/Church Street Drainage Improvements
5. Maine Department of Transportation Main Street Sidewalk Grant

IX. Selectmen's Discussion Items

X. Executive Session: Discussion of Police Officer Collective Bargaining Agreement Negotiations per 1 M.R.S.A. § 405(6) D

XI. Adjournment

Town Manager Notes for February 3, 2021 Board of Selectmen's Meeting

Town Manager Items

1. **Update on Municipal Parking Lot Sewer Line Project (verbal)** A letter from the Great Salt Bay Sanitary District is attached.

2. **Waterfront Project Update (verbal)**

3. **Draft Solar Energy Systems Ordinance** - The Board does not need to take formal action on this at this time. I would, however, like to make sure that the Selectmen are supportive of the Town moving forward on this proposed ordinance.
   The following narrative was prepared by Town Planner Bob Faunce:

   If you have been reading the LCN regularly you are aware of the many large solar projects that have been or are in the process of being approved in Lincoln County. Damariscotta is home to three solar projects: a small community system at the Friends Meeting House, a small system approved in 2019 at the closed town landfill and a larger system approved in January at the Coastal Rivers property off Main Street. Large solar systems are not listed as a permitted use in the Land Use Ordinance. The Friends and Coastal Rivers projects were approved as accessory uses while the town landfill project was approved as a municipal utility use. This means that an argument can be made that stand-alone large solar systems that are not accessory to another use or are a municipal project are not permitted in Damariscotta, an oversight that I am proposing to address in the attached solar energy systems ordinance.

   Town staff have been approached by two separate developers who wish to construct community solar systems in Damariscotta. Community solar systems permit residents to subscribe to a system and receive credits on their utility bills in the range of 15% and save on electricity costs. While we believe it is important to encourage clean power projects, large projects can potentially create issues that should be addressed by ordinance. For example, solar arrays of 5, 10, 20 or more acres are not uncommon. Since they can require large parcels of undeveloped land, unregulated development can impact important rural lands and views unless buffering and visibility are adequately handled. In addition, issues such as setbacks, eventual decommissioning and removal of large systems, etc., need to be addressed.

   The attached draft is based, in part, on a recently enacted ordinance in Rockport. The following are key provisions:

   - *Ground-mounted systems, such as at the landfill, are exempted if they do not exceed 1 acre in area.*
   - *Residential solar energy systems are exempted.*

- *Roof mounted solar energy systems are exempted.*
- *Ground-mounted systems that exceed 1 acre are exempt if they are located on the same parcel as a principal use (that is, they are accessory to the principal use) and at least half of the energy generated is used by the principal use. These systems still must comply with maximum height and setback requirements.*
- *Ground-mounted systems must be set back 50 feet from the front, side and rear property lines and cannot exceed 25' in height when the panels are fully extended.*
- *Ground-mounted systems that exceed 1 acre and are not accessory to a principal use are limited to the Rural and C2 Districts.*
- *Ground-mounted systems that exceed 1 acre must be buffered from public roads and residences. If they exceed 5 acres in area they must not be visible from public roads. The purpose of this requirement is to ensure that Damariscotta's important rural view-scapes are not lost.*
- *There are provisions for decommissioning and removal of defunct systems. Solar technology is moving quickly and, like wind turbines, it may be cheaper to simply abandon them in the future.*

In order to have this proposed ordinance on the June Annual Town Meeting Warrant, Bob is scheduling meetings with the Land Use Advisory Committee and the required hearing before the Planning Board.

Official Action Items

1. **Date, Time and Location for Annual Town Meeting** (Tabled from January 20 Meeting) Town Clerk Becky Bartolotta is in the process of gathering the information that the Board requested at your January 20 meeting. The following is the narrative from my January 20 town manager notes:
At the last Annual Town Meeting, the Board was given the authority to set the date, time and location for the 2021 Town Meeting. The meeting is held in two sessions, the first being the secret ballot election and the second being the open Town Meeting. Staff is recommending that the secret ballot portion of the meeting be held on June 8, 8 AM to 8 PM at Town Hall and the open Town Meeting be held at Great Salt Bay Community School beginning at 6 PM on June 9. Given the possibility that there could still be restrictions on meeting attendance, I will be providing the Board with a warrant that includes the more substantive issues on the secret ballot and the more routine items on the portion of the warrant for the open Town Meeting.
Recommended Action: Set the 2021 Annual Town Meeting dates for June 8, 8 AM to 8 PM at Town Hall for the secret ballot election and June 9, starting at 6 PM, at Great Salt Bay Community School gym for the open Town Meeting.

Town Manager Notes for February 3, 2021 Board of Selectmen's Meeting

2. **Appointment to Budget Committee-** Eight of the nine regular member positions on the Budget Committee are currently filled. Bruce Rockwood was elected as an alternate member at the last Annual Town Meeting and Bruce has indicated that he is willing to fill the vacant regular seat. Per the Town Charter, vacancies in elected positions can be filled by appointment until the next Annual Town Meeting.
   Recommended Action: Appoint Bruce Rockwood to the vacant regular member position on the Budget Committee.

3. **Appointment to Planning Board Alternate Position-** The resignation of Elizabeth Printy from the Planning Board leaves a vacancy in one of the Alternate positions. Gary Rosenthal contacted me about the vacancy after he saw the article in the Lincoln County News regarding the open positions. I referred Gary to Bob Faunce and Bob was able to provide Gary with information on the work of the Board and member responsibilities. In his introductory email to me Gary stated the following: "my family and I have lived in the town for about 12 years and I have a strong interest in local politics and town issues. I am a retired school administrator and am currently working at GSB teaching remedial reading and math to elementary students and am very much interested in giving back to the town." I have attached the committee interest card that Gary completed. The term of office will expire at the end of this fiscal year.
   Recommended Action: Appoint Gary Rosenthal to the vacant alternate position on the Planning Board.

4. **Advertisement for Bids for Vine/Church Street Drainage Improvements**
   Attached are the bid documents prepared by Gartley and Dorsky for the Vine Street Drainage Project. As the Board will recall, the plans were updated to incorporate the wishes of several of the abutting property owners last July. Aside from needing to revise the dates for the notice and the bid opening, I am recommending that the documents be approved as presented.
   Recommended Action: Approve the Advertisement for Bids documents prepared by Gartley and Dorsky for the Vine Street drainage project.

5. **Maine Department of Transportation Main Street Sidewalk and Bikeway Grant**
   I received the attached notification from Maine DOT this week regarding the Town's application for grant funding for the Town's Main Street sidewalk project. Not only has MDOT approved our project which we requested for 2023-24, they have approved funding for the engineering and preliminary right of way acquisition for 2021. The 2021 grant is for $48,000. The local match will bring the total available up to $60,000.

Town Manager Notes for February 3, 2021 Board of Selectmen's Meeting

As the Board will recall, The project is for a 1,650 foot sidewalk and bikeway from Biscay to Great Salt Bay School and pedestrian-light activated crosswalks across Main and across Biscay. The total estimated project cost is $864,370.

Given the burden that the Locally Administration Project (LAP) management places on managers in smaller towns, Maine DOT now offers an option where the Department will manage the project. This will require that a larger part of the project funding will go towards State administrative costs. Sufficed to say, in my view, there is no question that the Town should go this route given our recent experiences with building a sidewalk on a State road.

The accrual of sidewalk funding dollars in our TIF Fund will not begin until FY 2023.Thus I am asking the Board to approve funding for the $12,000 local match out of capital reserve funds. Since the Bristol Road Sidewalk Project is not yet completed, we do not have a final total on the amount that will be available in sidewalk reserves. The Town may need to allocate FY 2022 capital dollars for some of this cost.

Recommended action: Accept Maine Department Award of $48,000 for the engineering and preliminary right of way acquisition, confirm that the Town continues to want to design and construct this project, re-certify that the local match has been obligated through future TIF revenues and request that the project be administered by Maine DOT staff.

The Great Salt Bay
Sanitary District
Water and Wastewater
P. O. Box 23, Damariscotta, Me. 04543 207-563-5105

January 28, 2021

Robin Mayer
Chair Person
12 School Street
Damariscotta, Maine 04543

Dear Ms. Mayer,

After careful consideration the Board of Trustees voted not to take possession of the proposed pump station for Damariscotta Center.

Best regards,

LeeAnna Libby
Wastewater Manager
Great Salt Bay Sanitary District

Chapter 107
SOLAR ENERGY SYSTEMS ORDINANCE
Damariscotta, Maine

§107.1 AUTHORITY

This ordinance is enacted pursuant to the authority given the Town in MRSA Title 30-A, Section 3001.

§107.2 PURPOSE

The purpose of this Ordinance is to regulate the size, location and development standards for certain solar energy systems in Damariscotta.

§107.3 APPLICABILITY

A. This ordinance shall apply to proposals to construct ground-mounted solar energy systems that exceed 1 acre in panel area. The following solar energy systems are not subject to this ordinance.

   1. Residential solar energy systems

   2. Roof-mounted solar energy systems

   3. Ground-mounted solar energy systems that exceed 1 acre in panel area for which at least 50% of the energy generated is consumed by a principal use on the same parcel of land except that such systems shall comply with the dimensional requirements of §107.5 and the buffer requirements of §107.7.A.

B. Ground-mounted solar energy systems that exceed 5,000 sf in panel area or result in the stripping, grading, removal or filling of earth materials of more than 20,000 square feet in area in the aggregate are subject to Chapter 102, Site Plan Approval.

§107.4 DEFINITIONS

SOLAR ENERGY SYSTEM - A facility whose primary purpose is to harvest energy by transforming solar energy into another form of energy or transferring heat from a collector to another medium using mechanical, electrical, or chemical means.

GROUND-MOUNTED SOLAR ENERGY SYSTEM - A solar energy system that is structurally mounted to the ground.

PANEL AREA – The total area of solar panels based on total airspace projected over the ground.

§107.5 DIMENSIONAL REQUIREMENTS

A. Ground-mounted solar energy systems shall not exceed 25 feet in height at maximum tilt.

B. Minimum front setback shall be 50 feet, minimum side setback shall be 50 feet and minimum back setback shall be 50 feet.

§107.6 PERMITTED LOCATIONS

Unless exempted by §107.3.A, solar energy systems that exceed 1 acre in panel area are limited to the Rural and Commercial II Districts.

§107.7 Screening, Security, Maintenance and Regulatory Compliance

A. Ground-mounted solar energy systems that exceed 20,000 sf in panel area shall be buffered from public roads and residences by plantings, berms, and natural topographical features. Ground-mounted solar energy systems that exceed 5 acres in panel area shall be further buffered such that they are not visible year round from public roads.

B. Lots on which Ground Mounted Solar Energy Systems are located shall be protected by a perimeter fence unless the Planning Board determines pursuant to Site Plan Review that such fencing is not necessary to protect the facility or the public. One or more signs shall be affixed to the fencing identifying the owner of the facility and emergency contact information.

C. For purposes of emergency services, the owner or operator of a ground-mounted solar energy system shall provide a copy of the project summary, electrical schematic, and site plan to the Damariscotta Fire Chief. Upon request, the owner or operator shall cooperate with the Fire Department in developing an Emergency Response Plan. All means of shutting down the system shall be clearly marked on the plan. The owner or operator shall identify a responsible person to the Code Enforcement Officer and the Fire Chief for public inquiries throughout the life of the installation.

D. The owner or operator of a ground-mounted solar energy system shall maintain the facility in good condition. Maintenance shall include but not be limited to, painting, structural repairs, vegetation control and integrity of security measures. Site access shall be maintained to a level acceptable to the Damariscotta Fire Chief. The owner or operator shall be responsible for the cost of maintaining the access road(s) unless the road(s) is accepted as a public way.

E. The owner or operator of a ground-mounted solar energy system shall build and maintain it in compliance with all relevant Federal, State and Local Laws, Regulations, and Ordinances.

§107.8 PERFORMANCE GUARANTEE

After a ground-mounted solar energy system that is subject to this ordinance is approved but before a building permit is issued, the applicant shall submit to the Town of Damariscotta a performance guarantee in the amount of 150% of the applicant's estimated demolition cost of the system, subject to a review of such cost by the Code Enforcement Officer. The applicant may apply to the Code Enforcement Officer for release of the guarantee at such time that it or its assignees remove the system and associated abandoned structures, and such completed removal is found to be satisfactory by the Code Enforcement Officer.

§107.9 DECOMMISSIONING AND REMOVAL

A ground-mounted solar energy system that is subject to this ordinance and that has reached the end of its useful life, ceases to generate power or has been abandoned shall be removed pursuant to a plan approved by the Damariscotta Planning Board during the application process. The owner or operator shall remove physically the installation no more than 180 days after the date of discontinued operations. The owner or operator shall notify the Code Enforcement Officer by certified mail, return receipt requested, of the proposed date of the discontinued operations and plans for removal.

A. Decommissioning shall consist of: (1) physical removal of all solar energy systems, structures, equipment, security barriers and transmission lines from the site; (2) disposal of all solid and hazardous waste in accordance with Local, State and Federal waste disposal regulations; and (3) stabilize or re-vegetation of the site as necessary to minimize erosion. The Code Enforcement Officer may allow the owner or operator to leave landscaping or designated below-grade foundations to minimize erosion and disruptions to vegetation.

B. Absent a notice of a proposed date of decommissioning or written notice of extenuating circumstances, ground-mounted solar energy systems shall be considered abandoned when it fails to generate electricity for more than one year without having first obtained the written consent of the Code Enforcement Officer. Determination of abandonment shall be made by the Code Enforcement Officer.

C. If the owner or operator of a ground-mounted solar energy system fails to remove the installation in accordance with the requirements of this section within 180 days of abandonment or the proposed date of decommissioning, the Town of Rockport retains the right to use the performance guarantee and any and all legal or available means necessary to cause an abandoned, hazardous or decommissioned solar energy system to be removed.

§107.10 ENFORCEMENT

The Code Enforcement Officer shall be responsible for administering the provisions of this ordinance, including interpreting the provisions hereof.

§107.11 SEVERABILITY

Should any section or provision of this Ordinance be declared by the courts to be invalid, such decision shall not invalidate any other section or provision of the Ordinance.

§107.12 CONFLICTS WITH OTHER ORDINANCES

Whenever a specific provision within this Ordinance conflicts with or is inconsistent with another specific provision within this Ordinance or a specific provision of any other ordinance, regulation or statute, the more restrictive specific provision shall control.

§107.13 AMENDMENTS

All changes and amendments to this Ordinance must be made at a regular or special Town Meeting of Damariscotta, by a majority of the governing body.

§107.14 ADMINISTRATION

The Planning Board is authorized to review and act on all applications for ground-mounted solar energy systems subject to this ordinance. In considering applications and plans under this provision, the Board may act to approve, disapprove, or approve with conditions as authorized by these provisions. No municipal permits shall be issued, nor construction work begun on any use or development covered by this Ordinance until the application has been approved by the Board. All work shall be carried out in accord with the documentation submitted and approved by the Board.

§107.15 APPEALS

A. The Board of Appeals shall have jurisdiction to hear and decide appeals brought pursuant to the enforcement of this Ordinance. Any person or persons aggrieved by the action of the CEO, the Planning Board or any other municipal official in their administration of this Ordinance shall have the right of appeal to the Board of Appeals. Such appeal shall be taken pursuant to the procedures set forth in the Board of Appeals Ordinance. The Board of Appeals shall sit in its capacity as an appellate board, utilizing and applying its procedures in the Board of Appeals Ordinance and such other rules and procedures of the Board as they may apply. Any person or persons aggrieved by the decision of the Board of Appeals shall have the right to appeal to Superior Court. The person or persons filing the appeal shall have the burden of proof.

Legislative History

- Enacted [date]; Effective [date]

Town of Damariscotta
Committee Interest

Last Name:	First Name:
ROSENTHAL	GARY

Street Address: PO Box 1445 DAM., ME 04543

Email Address: grosenth@vt.edu

Phone: Home: Office:

Fax #: Cell: 207-380-3556

Place of Employment: GREAT SALT BAY SCHOOL

Profession/Title: ED TECH III

Relevant Experience, Education: FORMER School Admin./30 Yrs; Retired

Relevant Degrees, Professional Certificates: B.A., M.Ed, (M.A.+30) ME DOE CERT.

Town Committees
(Please indicate your interest)

- ❑ Board of Selectman - 3 year - elected
- ☑ Planning Board - 3 years - appointed
- ❑ Board of Appeals - 3 years - appointed
- ❑ Financial Advisory - 3 years - appointed
- ❑ Harbor - 3 years - appointed
- ❑ Shellfish - 3 years - appointed
- ❑ Budget - 3 years - elected
- ❑ Cemetery - 3 years - elected
- ❑ School Board - 3 years - elected
- ❑ GSB Sanitary District - 3 years - elected

Other Volunteer Opportunities:

- ❑ Waterfront Improvement
- ❑ Earth Fest
- ❑ Biscay Beach Management
- ❑ Community Bulletin Board
- ❑ Cemetery Adoption
- ❑ Ordinance Review
- ❑ Other:

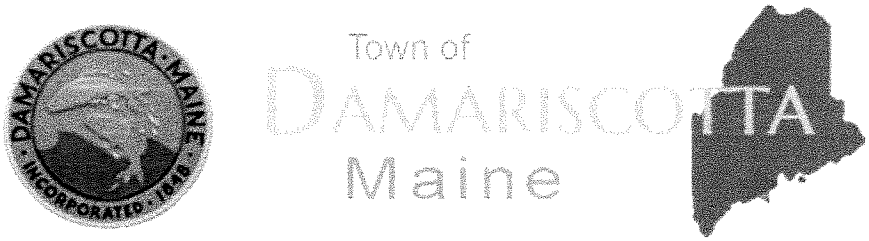
Please go to www.townofdamariscotta.com for more information

TOWN OF DAMARISCOTTA

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

VINE STREET DRAINAGE PROJECT



Town of Damariscotta
21 School Street
Damariscotta, ME 04543

January 20, 2021

Prepared By:

Gartley & Dorsky
ENGINEERING SURVEYING

59B Union Street P.O. Box 1031 Camden, ME 04843-1031
Ph. (207) 236-4365 Fax (207) 236-3055 Toll Free 1-888-282-4365
165 Maine Street Suite 2F P.O. Box 1072 Damariscotta, ME 04543
Ph. (207) 790-5005

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TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
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TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
INTRODUCTION

1. GENERAL

A. This CONTRACT covers the Vine Street Drainage project in the Town of Damariscotta. This CONTRACT covers all work to be performed.

B. Scope of work, to include, but not limited to:

BASE BID:

Includes but is not limited to the removal of the existing stormwater pipes, installation of new 15" and 12" diameter HDPE stormwater pipes, installation of a new 4" PVC underdrain, installation of new catch basins, removal and reconstruction of a ±60' section of sidewalk along the northern side of Vine Street, paving a ±365 square-foot section of disturbed roadway, regrading, as well as all other project specifics indicated in the DRAWINGS and CONTRACT DOCUMENTS.

2. DEFINITIONS

A. Definitions shall be as listed in the Agreement. "OWNER' shall mean Town of DAMARISCOTTA, acting through or by its authorized representative.

3. SCHEDULE

A. Construction shall be substantially complete in accordance with the following schedule:

Bids Due:	**February 19, 2021 @ 2:00 PM**
Anticipated Award:	**March 12, 2021**
Construction Start Date:	**Weather Permitting As Soon As Contractor Is Available**
Project Completion Deadline:	**Construction must be completed six (6) weeks after commencement and by June 4, 2021.**

4. OTHER CONSIDERATIONS

A. Bidders are advised of the requirement to maintain effective protection of Town property, adjacent private property, building occupants, pedestrians and vehicular traffic at all times.

B. Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the site conditions and CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to its BID. Bidder shall be responsible for preparing quantities and takeoffs.

C. Attention is drawn to the requirement to reconstruct all disturbed areas to their existing condition on the properties. Reconstruction of disturbed areas shall include but not be

limited to replacement of plantings, surface materials, signage, finishes, etc. All work shall be performed as part of the LUMP SUM bid.

D. Alternative bond forms prepared by a bonding agent will be acceptable.

E. Except when otherwise stated, the amount of insurance for each policy shall be not less than:

1. Liability for bodily injury, including accidental death:

(1) $2,000,000 for any one person and (2) $2,000,000 for each accident.

2. Liability for Property Damage:

(1) $2,000,000 for any accident and (2) $2,000,000 for all accidents.

TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
NOTICE AND INFORMATION TO BIDDERS

BID DUE DATE
The Town of DAMARISCOTTA will receive sealed bids for a project entitled: **"Vine Street Drainage"** on or before **February 19, 2021, at 2:00 PM** at the Town Office located at 21 School Street, Damariscotta, Maine 04543. At which time, the received bids will be opened and read aloud. All bids shall be in accordance with the NOTICE AND INFORMATION TO BIDDERS, ALL PLANS LISTED IN THE DRAWING INDEX, BID FORM, CONTRACT AGREEMENT, OFFER AND AWARD, SPECIAL CONDITIONS, ADDENDA and SPECIFICATIONS. All of the bid documents are a material part of this NOTICE and are incorporated by reference into this NOTICE.

BID BOOK AND PLANS
Bid packages will be made available by Gartley & Dorsky Engineering & Surveying, Inc. Hard copies of the bid package will be provided for $50.00 or by email at no charge.

QUESTIONS
Project-specific questions, identification of discrepancies, and/ or omissions from the project documents shall be requested in writing or emailed to Andrew Hedrich, Gartley & Dorsky Engineering & Surveying, Inc. 59 Union Street, Unit 1, P.O. Box 1031, Camden, ME 04843 or at AHedrich@gartleydorsky.com. Questions received less than four (4) days in advance of the Bid Due Date will not be answered. Prior to an award of the Contract, no other person has been authorized to make any oral modifications or changes in the terms and specifications of this NOTICE. Bidders shall not contact any other staff for clarification of Contract provisions, and Owner will not be responsible for any interpretations so obtained. The Project Engineer will provide additional written clarification concerning the issues raised in the NOTICE to all prospective bidders no later than two (2) days prior to the bid due date.

BID REQUIREMENTS
For purposes of this BID NOTICE and all Project documents, the term "bidder" shall mean any person, company or organization submitting a Proposal pursuant to this NOTICE, and the term "Bid" shall mean a Proposal submitted by a bidder. Each Bid must be made upon blank forms provided in the Request for Bid provided by the Town of Damariscotta and must be accompanied by a bid bond at five (5) percent of the bid amount as a bid guarantee. A Contract Performance Surety Bond and Contract Payment Surety Bond each in the amount of 100 percent of the contract price, will be required of the successful Bidder. The Contractor will pay to the Town of Damariscotta the amount of $150.00 per day for liquidated damages for each calendar day that the Contractor shall be in default after the time stipulated in the contract document.

In the execution of the Contract, the Contractor and all subcontractors agree and undertake not to discriminate in their hiring or in the furnishing of goods or services required by this Contract on the grounds of race, color, religion, sex, sexual orientation, national origin or citizenship status, age, disability or veterans status, and to provide reasonable accommodations to qualified individuals with disabilities upon request. All employees, agents, or subcontractors of the Contractor who enter into or upon the Town's premises for any reason relating to this Contract shall at all times abide by and adhere to all laws, regulations, and/or the Town policies against sexual harassment and discrimination, and shall not engage in, and shall report to the Town, any criminal or nefarious conduct on the property.

All deviations from the contract documents must be noted in detail by the Bidder, in writing, at the time of submittal of the formal bid. Bidders are expressly informed that any material deviation from the contract documents may be a basis for rejection of the Proposal at the time the Town considers an award of the Contract.

At the time of the opening of proposals, each Bidder shall be presumed to have read and be thoroughly familiar with the construction plans in this BID NOTICE and all enclosures. The failure or omission of any bidder to receive or examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect to the Proposal submitted. Any bidder to whom a contract is awarded shall be responsible for observing applicable standards for fair employment practices and work safety.

BONDING

Each bid must be made upon blank forms provided in the Request for Bid provided by the Town and must be accompanied by a bid bond of five (5) percent of the bid amount as a bid guarantee or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the required amount payable to the Town of Damariscotta as a Bid Guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each in the amount of 100 percent of the Contract price, will be required of the successful Bidder.

BID AWARD AND PROJECT SCHEDULE

The Board of Selectmen reserve the right to accept or reject any or all bids. The bid will be awarded to the lowest responsive & responsible Bidder while considering project experience and familiarity with the Contractor. Bid results will be provided to Bidders upon request.

TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
BID FORM

The undersigned Bidder acknowledges receipt of the NOTICE AND INFORMATION TO BIDDERS, ALL PLANS LISTED IN THE DRAWING INDEX, BID FORM, CONTRACT AGREEMENT, OFFER AND AWARD, SPECIAL CONDITIONS, ADDENDA and SPECIFICATIONS respectively and hereby proposes to provide the work. Provide lump sum bid price for the work to be completed by the dates indicated on the bid schedule.

Base Bid: Includes but is not limited to the removal of the existing stormwater pipes, installation of ±280' of 15" diameter HDPE stormwater pipes, installation of 2 new 3' diameter catch basins, one new 5' diameter catch basin, and grading, as well as all other project specifics indicated in the DRAWINGS and CONTRACT DOCUMENTS.

Bid Alternate #1: Includes but is not limited to replacement of degraded metal culvert under Vine Street, installation of a Vine Street catch basin, installation of 70' of storm drain pipe from catch basin to open ditch, reconstruction of a ±60' section of sidewalk along the northern side of Vine Street, and repaving paving disturbed roadway, as well as all other project specifics indicated in the DRAWINGS and CONTRACT DOCUMENTS.

Option #1: Includes substituting the stone curbing for the sidewalk in Bid Alternate #1 with asphalt curbing.

	BID PRICE
BASE BID:	$_____
BID ALTERNATE #1 – VINE STREET CULVERT REPLACEMENT:	$_____
TOTAL BID:	$_____
OPTION #1 (DEDUCT) – SUBSTITUTE ASPHALT CURBING:	$_____

Name of Individual / Company:_____

Address:_____

Printed Name of Person Signing Form:_____

Telephone:_____

Email:_____

Signature:_____

Date:_____

Completion Date Acknowledged:_____ (initial)

Addenda Acknowledged: _____ (initial)

UNIT PRICING

BID ITEM	ITEM DESCRIPTION	UNITS	UNIT PRICE
203.20	Common Excavation	CY	
203.35	Crushed Stone 3/4"	CY	
304.10	Aggregate Subbase Course - Gravel - Type D	CY	
304.14	Aggregate Subbase Course - Type A	CY	
403.207	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size	Ton	
403.209	Hot Mix Asphalt, 9.5 mm Hand Placed	Ton	
403.210	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	Ton	
603.159	12" Culvert Pipe Option III	LF	
603.169	15" Culvert Pipe Option III	LF	
604	3' Catch Basin	Each	
604	4' Catch Basin	Each	
604	5' Catch Basin	Each	
605.XX	4" Underdrain	LF	
609.11	Vertical Curb Type 1	LF	
609.31	Curb Type 3	LF	
610.08	Plain Riprap	CY	
613.319	Erosion Control Blanket	SY	
615.07	Loam	CY	
618.13	Seeding Method Number 1 (Unit 1000 SF)	Unit	

TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
AGREEMENT

BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between _____ ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: The Town of Damariscotta – Vine Street Drainage

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Gartley & Dorsky Engineering & Surveying, Inc.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. The Work will be substantially completed on or before six (6) weeks after commencement and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in legal or arbitration proceedings the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $200.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

4.04 *Special Damages*

A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work other than Unit Price Work, a lump sum of: $_____.

B. Accepted unit bid alternate prices:

All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Owner as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during the performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments

previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 150 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of 12 percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied the Site and all drawings of physical conditions relating to existing surface or subsurface structures.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement
2. Performance Bond
3. Payment Bond
4. Other bonds
   a. None Noted
5. General Conditions
6. Supplementary Conditions
7. Specifications
8. Drawings and items listed on the attached Drawings & Additional Item Index
9. Addenda
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed
    b. Work Change Directives
    c. Change Orders
    d. Field Orders

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____

TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
DRAWING & ADDITIONAL ITEM INDEX

DRAWING NO.	TITLE
C1	Town of Damariscotta Vine Street Drainage: Site Plan — JANUARY 20, 2020
C2	Town of Damariscotta Vine Street Drainage: Site Details — JANUARY 20, 2020
V2	Town of Damariscotta Vine Street Drainage: Existing Conditions Topographic Site Plan – April 25, 2019

TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
ADDENDA & MODIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. No interpretation of the meaning of the Contract Documents will be made to any Bidder orally. Every request for such interpretations or questions, to be given consideration, must be received in the Engineer's office not later than the date specified in the Bidder's information. Any and all such interpretations and any supplemental instructions pertaining to General Bidders, will be in the form of written Addenda to the CONTRACT DOCUMENTS, which, if issued, will be sent by the Engineer to all persons on record as having received a complete set of CONTRACT DOCUMENTS (at the respective addresses furnished for such purposes). Such Addenda will be issued not later than 48 hours prior to time set for opening of General Bids.

B. Failure of any Bidder to receive any such Addenda shall not relieve such Bidder from any obligation under their bid as submitted. All Addenda so issued shall become part of the CONTRACT DOCUMENTS.

TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges their responsibility to ensure they have received all Amendments to the Bid Package. It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. Bid Amendments will not be posted any later than noon the day before the bid opening without individually notifying all the plan holders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

_____ _____

Date Signature of Authorized Representative

TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE
SPECIAL CONDITIONS

PART 1 - GENERAL

1.1 HOURS OF OPERATION

A. Regular work hours shall be at the Contractor's option. No work shall be performed prior to 7 a.m. local time, and all work shall end by 7 p.m. local time or dusk, whichever is earlier.

1.2 SCHEDULE OF OPERATIONS

A. No work is to be performed on Sundays. The Contractor shall provide a construction schedule indicating when access to the site shall be restricted.

B. The Contractor shall, in good workmanlike manner, perform, or cause to be performed, all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to complete all the work required by this Contract, in accordance with the provisions of the Contract Documents, including all sub-divisions thereof, and in accordance with the directions of the Engineer as given from time-to-time during the progress of the work. He shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required. He alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation.

1.3 ACCIDENT PREVENTION

A. Comply with the American National Standards Institute (ANSI) and the American Society of Safety Engineers (ASSE) A10.33 Safety and Health Program Requirements for Multi-Employer Projects. The Field Superintendent of the Contractor shall conduct regular and frequent inspections of the site for compliance with these safety regulations, stating in writing to the Engineer each time that he has done so.

1.4 COORDINATION OF THE WORK

A. The Contractor and all his Subcontractors shall coordinate their work with all adjacent work and shall cooperate with all other trades so as to facilitate general progress of the work. Each trade shall afford all other trades every reasonable opportunity for the installation of their respective work and for the storage of their materials and equipment. The Contractor shall be responsible for coordination.

B. Each Subcontractor shall assume responsibility for the correctness and adequacy of his work. Each Subcontractor shall be responsible for and pay all damages done by his work or his workmen.

C. The Contractor shall cooperate with, and provide access and working area to the Owner's Contractors for the performance of specific work assigned to them.

1.5 PROJECT MEETINGS

A. The Contractor will be required to meet with the Engineer, and the Owner's designated representative, if applicable, during the course of the Contract for purpose of progress review, coordination of shop drawing schedules, sample submittals, and other items of

work requiring such coordination. The dates of such meetings shall be as mutually agreed upon between the Contractor, the Engineer, and the Owner.

1.6 TESTS AND INSPECTIONS

A. The Contractor shall make such tests and inspections of his workmanship and materials as may be required by the Building Code, state or municipal laws, or as called for under the various sections of the SPECIFICATIONS.

B. All expense attached to such tests and inspections, unless otherwise specified under the various sections of the SPECIFICATIONS, shall be borne by the Contractor, who shall furnish all labor, tools, instruments, water, temporary power and light, construction and equipment necessary for these tests and inspections. Records of all tests and inspections shall be furnished to the Engineer. The Contractor shall remove all temporary work, materials, and equipment upon completion of tests and inspections.

C. Where in the various sections of the SPECIFICATIONS inspection and testing of materials, processes, and the like is called for, the selection of bureaus, laboratories, and/or agencies for such inspection and test shall be subject to approval of the Engineer.

D. Should any material or work be found, after testing or inspection, to be defective or inferior, such material and/or work shall be removed and replaced with new sound materials and/or work as approved by the Engineer. The removal and replacement herein called for shall be at the Contractor's expense. Refer to the GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS for additional requirements regarding testing and inspection of materials.

1.7 FIRE PROTECTION AND PREVENTION

A. Provide and maintain adequate fire protection including fire extinguishers, dry chemical, or other effective means of fire extinguishment, ready for instant use, distributed around the project, and in and about temporary structures during construction of the Work.

B. The Contractor shall provide effective means of fire extinguishment to provide adequate firefighting coverage for the project.

C. Gasoline and other flammable liquids shall be stored in and dispensed from U. L. listed safety containers in conformance with National Board of Fire Underwriters' recommendations. Storage shall not be within the permanent buildings.

D. The Contractor shall keep the site free of rubbish and debris as specified hereunder.

E. Make arrangements for periodical inspection by local fire protection authorities and insurance underwriters' inspections. Cooperate with said authorities and promptly carry out their recommendations. Comply with all applicable laws and ordinances and with Owner's fire prevention requirements.

F. Tarpaulins that may be used during construction of work shall be made of material which is resistant to fire, water, and weather. Tarpaulins shall have U. L. approval and comply with FS-CC-C-746.

G. Torch-cutting and welding operations shall have approval of the Contractor before such work is started, and chemical extinguishers shall be available at location where work is in progress.

H. Open fires of any kind will not be permitted in or about premises.

1.8 EXISTING UTILITIES

A. Conform to Dig Safe protocols.

B. Existing utility lines indicated on the Drawings, such as cables, ducts, conduits, and piping shall, if damaged (unless they are to be abandoned), be immediately repaired, protected,

and maintained in use until relocation of same has been completed, or shall be cut and capped where directed, or shall be prepared for service connections when so required. Damaged utilities shall be repaired by the Contractor at no extra cost to the Owner. Any utilities encountered which are not indicated on the Drawings shall be reported.

C. The Contractor shall notify the Owner in writing three days in advance of the proposed time for shutting down or interrupting any utilities, services, or facilities which may affect the operation of other buildings, services, or facilities of the Owner. Unless otherwise authorized by the Owner, he shall so schedule and coordinate his work that such interruption will occur on weekends, holidays, or before or after the normal working day of the Owner's facilities. In no case shall any shutdown or interruption of any utilities, services, or facilities be made without the approval and authorization of the Owner. Both new and existing service and utility systems shall be complete and ready for service before connecting existing lines to new systems.

D. The Owner will cooperate fully, at the Contractor's request, in assisting the Contractor in locating and identifying underground utilities.

1.9 AS-BUILT DRAWINGS

A. The Contractor, mechanical and electrical Subcontractors shall keep one set of prints up to date showing the actual work "as-built" for all items of work. "As-built" drawings will be turned over to the Engineer at the completion of the Work.

1.10 RUBBISH REMOVAL

A. The Contractor shall require each of his Subcontractors engaged upon the Work to bear his full responsibility for cleaning up during and immediately upon completion of his work on a daily basis, and shall remove all rubbish, waste, tools, equipment, and appurtenances caused by and used in the execution of his work; but this shall in no way be construed to relieve the Contractor of his primary responsibility leaving all work in a clean and proper condition satisfactory to the Engineer and/or Owner.

B. Immediately after unpacking, all packing materials, case lumber, excelsior, wrapping, or other rubbish, flammable or otherwise, shall be collected and removed from the buildings and premises.

1.11 SITE DRAINAGE AND PUMPING

A. The Contractor shall take over the responsibility for site drainage upon entering the premises and shall maintain such drainage during the life of his Contract in a manner approved by the Engineer and so as not to adversely affect the adjacent areas.

B. The Contractor shall during the progress of the Work, provide and maintain all required pumps, suction and discharge lines, and power in sufficient number and capacity to keep all excavations, pits, trenches, foundations, and the entire property area free from accumulation of water from any source whatsoever, at all times, and under any and all circumstances and contingencies that may arise.

1.12 CONSTRUCTION HOISTS

A. The Contractor shall provide and pay for hoisting machinery and/or crane service as necessary to lift all personnel and materials for all operations, both his and his Subcontractors, of sufficient capacity and speed to produce no delay in the completion of the Work.

1.13 PARKING

A. Vehicles of persons employed on the construction project shall park in an area as mutually agreed upon by the Owner, Contractors and Engineer. At the conclusion of the Work, and prior to Substantial Completion, the Contractor shall restore the selected on-site parking area to its original condition.

1.14 SITE ACCESS

A. Safe passage shall be maintained for pedestrians during construction. No equipment, materials, or staging may block the walks, accessible walks, steps, ramps, or egress routes of the facility.

1.15 FINAL CLEANING

A. Before the final inspection all finished surfaces shall be swept, dusted, and cleared of all construction debris.

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name, and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
Town of Damariscotta
21 School Street
Damariscotta, ME 04543

BID
Bid Due Date:
Description *(Project Name— Include Location)*:

BOND
Bond Number:
Date:
Penal sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:
Town of Damariscotta
21 School Street
Damariscotta, ME 04543

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

Town of Damariscotta, 21 School Street,
Damariscotta, ME 04543

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐
See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ *(seal)*
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ *(seal)*
Surety's Name and Corporate Seal

By: _____
Signature *(attach power of attorney)*

_____
Print Name

_____
Title

Attest: _____
Signature

_____

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

   5.1 Claimants who do not have a direct contract with the Contractor,

      5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

      5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

   5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

   7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

   7.2 Pay or arrange for payment of any undisputed amounts.

   7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of

limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. **Definitions**

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default**: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows: (Enumerate)

NOTICE OF AWARD

Date of Issuance:

Owner: Town of Damariscotta | Owner's Contract No.:

Engineer: Gartley & Dorsky | Engineer's Project No.: 2018-787

Project: Vine Street Drainage Project | Contract Name:

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [_____] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

_____ .

[describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is: $_____ *[note if subject to unit prices, or cost-plus]*

[ ] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically. *[revise if multiple copies accompany the Notice of Award]*

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner [____]counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance and payment bonds]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner:

Authorized Signature

By:

Title:

Copy: Engineer

NOTICE TO PROCEED

Owner:	Town of Damariscotta	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	Gartley & Dorsky	Engineer's Project No.:	2018-787
Project:	Vine Street Drainage Project	Contract Name:	
		Effective Date of Contract:	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____, 20__]. *[see Paragraph 4.01 of the General Conditions]*

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, [the date of Substantial Completion is _____, and the date of readiness for final payment is_____] ***or*** [the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before starting any Work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance

with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. *Unit Price Work*—Work to be paid for on the basis of unit prices.

47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or

some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be

effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract

Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for

Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with

respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in

question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

   b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

   c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

   a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

   b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

   c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
    d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2)

was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving

rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Broad form property damage coverage.
4. Severability of interest.
5. Underground, explosion, and collapse coverage.
6. Personal injury coverage.
7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after

Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the

remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

8. allow for the waiver of the insurer's subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to

the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. shall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in

Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

   a. Contractor shall submit the number of copies required in the Specifications.

   b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

   a. Contractor shall submit the number of Samples required in the Specifications.

   b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. use or occupancy of the Work or any part thereof by Owner;
5. any review and approval of a Shop Drawing or Sample submittal;
6. the issuance of a notice of acceptability by Engineer;
7. any inspection, test, or approval by others; or
8. any correction of defective Work by Owner.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other

work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such

changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any

time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns

from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

   c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

   d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

   e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

   f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

   g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the

Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-

offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design

professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

1. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and

will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice

to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not

limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 01 35 43 - ENVIRONMENTAL PROCEDURES

PART 1 - GENERAL

1.1 DEFINITIONS OF CONTAMINANTS

A. Sediment: Soil and other debris that has been eroded and transported by runoff water.

B. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from construction activity.

C. Chemical Wastes: Includes salts, acids, alkalis, herbicides, pesticides, and organic chemicals.

D. Sanitary Wastes: Wastes characterized as domestic sanitary sewage.

1.2 ENVIRONMENTAL PROTECTION REQUIREMENTS

Contractor is advised that the project is subject to municipal standards and the standards of Maine Department of Environmental Protection Erosion and Sedimentation Control Law permit requirements (MRSA 38 § 420-C). Provide and maintain during the life of the Contract, environmental protection as defined therein. Provide environmental protective measures as required to prevent or control pollution that develops during normal construction practice. Provide environmental protection measures required to correct conditions that develop during the construction of permanent or temporary features associated with the project. Prevent unauthorized placement of fill, any material, or any unauthorized disturbance of any natural resource. Comply with all federal, state, and local regulations pertaining to water, air, and noise pollution.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

No wetland shall be disturbed. Other natural areas shall be preserved in their existing condition or restored to an equivalent or improved condition upon completion of the Work. Confine construction activities to areas defined by the work schedule, Drawings, and Contract Documents.

A. Land Resources: Except in areas indicated to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without special approval of the Owner's

representative. Do not fasten or attach ropes, cables, or guys to any existing nearby trees for anchorages unless specifically authorized. Where such special emergency use is authorized, the Contractor shall be responsible for any resultant damage.

1. Protection: Protect existing trees that are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operators. Remove displaced rocks from uncleared areas. Protect monuments and markers.

2. Repair and Restoration: Repair or restore to their original condition all trees or other landscape features scarred or damaged by the equipment operations. Obtain approval of the repair or restoration from the Engineer prior to its initiation.

3. Temporary Construction: Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and all other vestiges of construction. Temporary roads, parking areas, and similar temporary use areas shall be graded in conformance with surrounding areas and revegetated, seeded, or sodded as required by the plans.

B. Water Resources: Perform all work in such a manner that any adverse environmental impact on water resources is avoided. Storage of hydraulic fluid is not permitted on-site. Quantities of bulk materials shall be reduced to a level acceptable to the Owner's representative.

3.2 EROSION AND SEDIMENT CONTROL MEASURES

A. Burn-off: Burn-off of ground cover is not permitted.

B. Protection of Erodible Soils: All earthwork brought to final grade shall be immediately finished as indicated or specified. Protect immediately side slopes and backslopes upon completion of rough grading. Plan and conduct all earthwork in such a manner as to minimize the duration of exposure of unprotected soils, and in no case shall exposure exceed seven (7) days. Consult weather forecasts prior to exposing large areas of soil. Check erosion control measures before forecasted major storm events.

C. Temporary Protection to Erodible Soils: Utilize the following methods to prevent erosion and control sedimentation.

1. Vegetation and Mulch: Provide temporary protection on all side and back slopes as soon as rough grading is completed or sufficient soil is exposed to require protection to prevent erosion. Such protection shall be by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

3.3 CONTROL AND DISPOSAL OF SOLID, CHEMICAL AND SANITARY WASTES

Pick up solid wastes and place in containers that are emptied on a regular schedule. The preparation, cooking and disposing of food is strictly prohibited on the project site. Conduct handling and disposal of wastes to prevent contamination of the site and other areas. On completion, leave areas clean and natural looking. Remove signs of temporary construction and activities incidental to construction of permanent work in place

A. Disposal of Rubbish, Garbage, and Debris: Dispose of rubbish, garbage and debris in accordance with the requirements specified herein.

B. Sewage, Odor, and Pest Control: Dispose of sewage through chemical toilets or comparable effective units and periodically empty wastes. Include provisions for pest control and elimination of odors.

C. Petroleum Products: Conduct fueling and lubricating of equipment and motor vehicles in a manner that affords the maximum protection against spills and evaporation. Dispose of lubricants to be discarded and excess oil in accordance with approved procedures meeting federal, state and local regulations.

3.4 DUST CONTROL

Keep dust down at all times, including nonworking hours, weekends, and holidays. Sprinkle or treat with dust suppressers, the soil at the site, haul roads, and other areas disturbed by operations. Petroleum products will not be used as suppressers. No dry power brooming is permitted. Instead use vacuuming, wet mopping, wet sweeping, or wet power brooming.

3.5 NOISE

No blasting or use of explosives is permitted without written permission of the owner's representative and then only during designated times.

END OF SECTION 01 35 43

SECTION 01 55 26 - TRAFFIC CONTROL

1.1 DESCRIPTION

A. Work Included:

1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.

2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic.

3. Do not close roads or streets to passage of the public without the permission of the proper authorities.

B. The local police department or road commissioner will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage. If a regulator furnishes an inspector on the job as a result of poor traffic control by the Contractor, the Contractor shall be responsible for all costs assessed by the regulator.

1.2 SCHEDULING WORK

A. Schedule all work so that road closures are minimized. Limit closure to 21 days.

B. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.

C. Do not start work in any new location without the permission of the Engineer.

D. Notify all police and fire departments of all scheduled detours and when streets are reopened, as needed.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

A. Provide adequate warning signs, barricades, signal lights, watchmen and take other necessary precautions for the safety of the public.

B. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.

C. Provide barricades of substantial construction and painted with a finish that increases visibility at night.

D. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.

E. Maintain all necessary signs, barricades, lights, watchmen and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.

F. Traffic control signs for construction work shall be located and of the size and type as outlined in the Manual on Uniform Traffic Control Devices for Streets and Highways as published by the U.S. Department of Transportation.

2.2 UNIFORMED POLICE OFFICER

A. A uniformed police officer is a police officer (local, county or state) on regular or special duty dressed in uniform with the necessary high visibility vest and apparel needed for traffic control.

B. Arrange the police detail with the local Chief of Police, County Sheriff, or State Police Captain depending on jurisdiction.

2.3 FLAG PERSON

A. A flag person is an individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.

B. Flag persons shall be provided by the Contractor.

PART 3 - EXECUTION

3.1 DETOURS

A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.

B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.2 INCONVENIENCE TO RESIDENTS OF VICINITY

A. Whenever a traveled way is closed, perform the Work in such a manner that local travel and residents in the vicinity of the Work will be inconvenienced as little as possible.

B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.

3.3 TRAFFIC CONTROL OFFICERS

A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.

B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

END OF SECTION 01 55 26

SECTION 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Closeout Procedures.

B. Final Cleaning.

1.2 RELATED SECTIONS

A. Section 01 74 13 – Project Cleaning

1.3 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

B. Provide submittals to Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.4 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances.

C. Clean debris from roof.

D. Clean site; sweep paved areas, rake clean landscaped surfaces.

E. Remove waste and surplus materials, rubbish, and construction facilities from the site.

END OF SECTION 01 70 00

SECTION 01 74 13 - PROJECT CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Maintain premises and public properties free from accumulation of waste, debris, and rubbish, caused by activities relating to the Work.

2. At completion of the Work, remove waste materials, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces. Leave project clean and ready for use.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Conduct cleaning and disposal operations in accordance with all applicable local and state laws, ordinances, and code requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Cleaning During Construction:

1. Execute cleaning operations to ensure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.

2. Entirely remove and dispose of material or debris during the progress of the work that has washed into or has been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations.

3. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

4. At reasonable intervals during the progress of work, clean the site and dispose of waste materials, debris, and rubbish.

5. Clean interiors of buildings, when applicable, prior to finish painting, and continue to clean, on an as-needed basis, until buildings or project areas are ready for occupancy.

6. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw material from heights.

7. When applicable, schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly painted surfaces.

B. Control of Hazards:

1. Store volatile wastes in covered metal containers, and remove from premises daily.

2. Prevent accumulation of wastes which may create hazardous conditions.

3. Provide adequate ventilation during use of volatile or noxious substances.

C. Disposal:

1. Do not burn or bury rubbish and waste materials on project site.

2. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.

3. Do not dispose of wastes into streams or waterways.

D. Final Cleaning:

1. Employ experienced workmen, or professional cleaners, for final cleaning.

2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from all sight-exposed interior and exterior finished surfaces.

3. Repair, patch and touch up marred surfaces to specified finishes.

4. Broom clean paved surfaces.

5. Rake clean non-paved surfaces of the project site.

6. Restore to their original condition those portions of the site not designated for alterations by the Contract Documents.

END OF SECTION 01 74 13

SECTION 31 05 13 - SOILS FOR EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Provide, place and compact borrow and bedding material in authorized excavation(s) below normal depth and in other location(s) as shown on the Drawings and/or as specified herein.

B. Related Work Specified Elsewhere:

1. Trench Excavation - Earth, Trench Excavation - Ledge, Trench Backfilling, Compaction, Control and Testing are specified in the appropriate sections in this division.

PART 2 - PRODUCTS

2.1 MATERIALS

All materials shall be applicable as specified in owner's geotechnical report. Utilize materials specified in the geotechnical report in all applicable locations. Materials otherwise not specified in owner's geotechnical report shall conform to the following minimum standards:

A. Gravel Borrow:

1. Well graded granular material having no rocks with a maximum dimension over six (6) inches, except where it is used for pipe bedding in which case the maximum size shall be two (2) inches.

2. Free from frozen material and other unsuitable material.

3. That portion passing a three inch square mesh sieve shall contain no more than 70 percent passing a l/4" mesh sieve and not more than l0 percent passing a number 200 mesh sieve when used as pipe bedding material and not more than five percent passing a number 200 mesh sieve when used as backfill around structures.

B. Screened Stone (Bedding Material):

1. Shall be either screened stone or crushed stone and shall be well graded in size from 1/4" to 3/4".

2. Clean, hard, and durable particles or fragments.

3. Free from dirt, vegetable, or other objectionable matter, and excess of soft, thin elongated, laminated or disintegrated pieces.

4. Sieve Analysis:

Sieve Designation	% Passing by Weight Square Opening
1"	100
3/4"	90-100
3/8"	20-50
No. 4	0-10
No. 8	0-5

C. Sand:

1. Clean, hard and durable particles or fragments.

2. Sieve Analysis:

Sieve Designation	% Passing by Weight Square Opening
3/8"	100
No. 4	95-100
No. 16	50-85
No. 50	10-30
No. 100	2-10

D. Underdrain Backfill Material:

1. Free from organic matter.

2. Gradations:

Type "B" Underdrain:

Sieve Designation	% Passing by Weight Square Mesh Sieves
1"	95-100
1/2"	75-100
No. 4	50-100
No. 20	15-80
No. 50	0-15
No. 100	0-10

Type "C" Underdrain:

Sieve Designation	% by Weight Passing Square Mesh Sieves
1"	100
3/4"	90-100
3/8"	0-75
No. 4	0-25
No. 10	0-5

Filter Fabric Lined Trench: 3"- 6" coarse aggregate.
Filter fabric in accordance with SECTION 31 32 19.23.

3. Shall conform to AASHTO T 27

E. French Drain Stone:

1. Hard, durable rock.

2. Gradations:

Sieve Designation	% by Weight Passing Square Mesh Sieves
6 inch	90-100
1½ inch	0-40
No. 4	0-5

3. Shall conform to AASHTO T 27 except that the total material sampled shall be sieved and the minimum weight of the sample will be 120 lbs.

F. 3/4"- Crushed Stone: Crushed Stone shall be a uniform material, containing angular pieces, as are those which come from a mechanical crusher. Gradation requirements shall be as follows:

Sieve Designation	% by Weight Passing Square Mesh Sieve
1"	98-100
3/4"	0-30
No. 200	0-3

G. Impervious Dam Material: As applicable, impervious dam material shall be uniform natural or selected cohesive soil with minimum of 30 percent of the material passing a No. 200 sieve. It shall not contain vegetation, masses of roots, individual roots larger than 12". long or 1/2". in diameter or other porous or organic matter.

H. Unsuitable Soil Materials: Shall be those defined in AASHTO M145, soil classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7; also, peat and other highly organic soils.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Place bedding material, initial backfill, impervious dam material and fill below pipe bedding in layers of uniform thickness as specified or shown on the Drawings. Maximum lift thickness shall be as specified or shown on the drawings, but not greater than 12".

B. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper. Conform to the requirements of the geotechnical report, but in no case shall compaction be

less than 95 percent of the fill material's maximum dry density determined in accordance with ASTM D1557.

C. In excavations below normal depth or where unsuitable materials are excavated, gravel borrow shall be used unless ground water makes such usage not practical; if such is the case, then screened stone shall be used.

D. No stone two (2) inches in diameter or larger shall be allowed within six (6) inches of the pipe.

E. Where soft silt and clay soils are encountered the trench shall be excavated 6" below the normal bedding and backfilled with six (6) inches of compacted sand.

F. No stone or rock greater than 12" measured at any point shall be placed in the trench backfill.

G. Bed from specified depth below pipe to top of pipe to support pipe and prevent damage. Unless otherwise specified in plan, detail, or applicable section, the following schedule gives the minimum bedding requirements for various types of pipe. Dimensions refer to distance below bottom of pipe.

D.I. Pipe	6" min. gravel borrow.
Concrete pipe	6" min. gravel borrow.
Culverts and Storm Drain Pipe	6" min. gravel borrow.
PVC or ABS Pipe	6" min. screened stone.
P.E. Pipe	6" min. screened stone.

H. Unless otherwise specified in plan, detail, or applicable section, the following schedule gives the minimum initial backfill requirements for various types of pipes.

D.I. Pipe	Gravel borrow; 6" min. over top of pipe.
Concrete Pipe	Gravel borrow; 6" min. over top of pipe.
Culverts and Storm Drain Pipe	Gravel borrow; 6" min. over top of pipe.
PVC or ABS	Screened stone; 6" min. over the top of the pipe.
P.E. Pipe	Screened stone; 6" min. over the top of the pipe.

END OF SECTION 31 05 13

SECTION 31 05 16 – AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building perimeter construction and backfilling, pond embankment construction and site structure backfilling.

B. Fill under slabs-on-grade.

C. Consolidation and compaction.

1.2 RELATED SECTIONS

A. Section 31 23 16 - Excavation.

1.3 REFERENCES

A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 kg) Rammer and 12" (304.8 mm) Drop.

C. ASTM D922 - Test Method for Density of Soil and Soil Aggregate in Place by the Nuclear Methods. (Shallow Depth)

D. ANSI/ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

PART 2 - PRODUCTS

2.1 FILL MATERIAL (as applicable)

A. Common Borrow: MDOT 703.18: (Only for site construction - not for building construction). Place and compact materials in continuous layers not exceeding 8"of compacted depth, compacted to 95 percent of its maximum dry density, in accordance with ASTM D1557 (modified proctor density).

B. Structural Backfill: Furnish in accordance with geotechnical report or specific plan requirements. Gravel Borrow: as specified in the geotechnical report, these plans, or MDOT 703.20: Place at over excavations below slabs and footings. Place over native material after organic soils are removed to raise subgrade below slabs and footings. Utilize per Geotechnical Report, as applicable. As a minimum, construct a 12" layer in a single 12" lift or lifts, and compacted to 95 percent of its maximum dry density, in accordance with ASTM D1557 (modified proctor density). In the case of footings set higher than original grade of competent mineral soil, first compact native material, use structural backfill to establish and

compact fill slopes at 1:1 slopes from the edges of footings (entire backfill areas for retaining walls).

C. Granular Backfill: Per MDOT 703.22 for utility excavations and backfilling operations.

D. Crushed Stone: Per MDOT 703.31 for utility excavations and backfilling operations, except that 100 percent shall pass the 2" sieve.

E. Detention Pond Embankment: Excavated or imported clay silt material, graded, free of lumps larger than 3", rocks larger than 2", and debris. Material shall have at least 20% fines, more than 20% by weight passing the No. 200 sieve, and shall be compacted to a minimum of 95% modified proctor density in 9"-12" maximum lifts. The contractor may utilize glacial marine soil excavated on site with the approval of the owner's representative.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify fill materials to be reused are acceptable.

B. Owner's designated representative shall observe the excavation and accept suitable borrow material for placement as pond embankment material. Sandy layers shall be excluded from use as embankment fill.

C. Verify foundation perimeter drainage installation has been inspected.

3.2 PREPARATION

A. Generally, compact subgrade to density requirements for subsequent backfill materials. The foundation and slab base soil should be placed directly on the existing proof-rolled native mineral soil. Proof rolling should consist of making three passes in a north-south direction followed by three passes in an east-west direction using a large (minimum three ton at drum static weight) vibratory roller in slab areas and narrow roller vibratory trench rollers at footings (all passes in same direction).

B. Cut out soft areas of subgrade not capable of insitu compaction. Fill and compact to density equal to or greater than requirements for subsequent backfill material.

3.3 BACKFILLING

A. Backfill and compact areas to contours and elevations with unfrozen materials.

B. Backfill and compact where footing elevations are higher than suitable native mineral soil with structural backfill below and at 1:1 slope from edge of footing (level for retaining walls). Structural fill should be placed in a maximum of 12" lifts and be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557, Modified Proctor Density

C. Backfill and compact pond embankment areas as early as possible to allow maximum time for settlement before shaping overflow structures.

D. Systematically backfill and compact to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces. Work shall be scheduled so that the pond embankment shall be constructed three months prior to final setting of elevation sensitive components, such as the emergency spillway, allowing maximum time for settlement to occur.

E. Place and compact materials in continuous layers not exceeding 6" compacted depth. Pond Embankment requirements: Pond embankment sections shall be constructed from 8" to 12" lifts. At each lift, a bulldozer or similar equipment shall mechanically break down clods of clay-silt material as each lift is shaped. The owner's representative shall verify that no sand layers remain in each lift. Unsuitable material shall be replaced. Each lift shall be compacted with a sheepsfoot roller to 90 percent modified proctor density. Water shall be added as may be required to reach compaction.

F. Employ a placement method that does not disturb or damage foundation perimeter drainage, foundation damp proofing, and utilities in trenches.

G. Maintain optimum moisture content of backfill materials to attain required compaction density.

H. Make changes gradual. Blend slope into level areas.

I. Remove surplus backfill materials from site.

3.4 FIELD QUALITY CONTROL

A. Compaction testing will be performed in accordance with ANSI/ASTM D1556, ANSI/ASTM D1557, and ANSI/ASTM D698.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.5 PROTECTION OF FINISHED WORK

A. Recompact fills subjected to vehicular traffic. Place and compact additional material of like kind and to equal compaction to re-establish suitable finished or subgrade.

END OF SECTION 31 05 16

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Clearing includes, but is not limited to, removal of trees, brush, stumps, wooded growth, grass, shrubs, poles, posts, signs, fences, culverts and other vegetation and minor structures; the protection of designated wooded growth; the storage and protection of minor structures and materials which are to be replaced; and the disposal of non-salvageable structures and materials, and necessary preliminary grading.

B. Limits of Work:

1. Perform clearing and grubbing work within the areas required for construction, or as shown on the Drawings, to a depth of l2 inches below the existing grade.

2. Perform additional clearing and grubbing work within areas and to depths which, in the opinion of the Engineer, interfere with excavation and/or construction, or are otherwise objectionable.

C. Work Not Included:

1. Clearing and grubbing work performed for the convenience of the Contractor will not be considered for payment.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Dispose of combustible material by burning only when permitted by and in accordance with all applicable local and state laws, ordinances and code requirements.

B. Remove and dispose of non-salvageable structures and material in accordance with all applicable local and state laws, ordinances and code requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide all materials required to complete the work.

B. All timber and wood shall become the property of the Contractor unless other agreements are made between the Owner and the Contractor.

C. Repair any damage to structures to the complete satisfaction of the Owner and Engineer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Carefully preserve and protect from injury all trees and/or shrubs not to be removed.

B. Right-of-way:

1. Where excavation is required on public or private rights-of-way containing trees, shrubs, other growth, or any structure or construction, obtain the Engineer's direction concerning the extent to which such obstacles can be cleared or stripped prior to performing the Work.

2. In all rights-of-way, remove only those particular growths or structures which are, in the opinion of the Engineer, essential for construction operations.

3. All other removals or damage shall be replaced or restored at the Contractor's expense.

3.2 PERFORMANCE

A. Clearing:

1. Remove and dispose of all trees, brush, slash, stubs, bushes, shrubs, plants, debris and obstructions within the area to be cleared, except any areas that may be designated as "Selective Clearing", and except as otherwise shown on the Drawings or as directed by the Engineer.

2. Remove all stumps unless otherwise directed by the Engineer.

3. Dispose of material to be removed daily as it accumulates.

4. Take special care to completely dispose of all elm trees and branches immediately after cutting either by burial in approved locations or, when permitted, by burning in areas well removed from standing elm growth.

B. Protection of Wooded Growth:

1. Fell trees toward the center of the area being cleared to protect trees and shrubs to be left standing.

2. Cut up, remove and dispose of trees unavoidably falling outside the area to be cleared.

3. Employ skilled workmen or tree surgeons to trim and repair all trees that are damaged but are to be left standing and paint all cut surfaces with an approved bituminous paint.

C. Selective Clearing:

1. When shown on the Drawings and when directed by the Engineer, perform selective clearing work to preserve natural tree cover.

2. Perform selective clearing work only under the direction and supervision of the Engineer.

3. Remove all dead and uprooted trees, brush, roots and other material which, in the opinion of the Engineer, are objectionable.

4. Cut flush with the ground and remove only those trees indicated by the Engineer.

5. Employ skilled workmen or tree surgeons to carefully trim all branches requiring cutting on trees to be left standing and to paint all cut surfaces with an approved bituminous paint.

6. Paint tree roots which are cut and are to be left exposed to the weather with an approved bituminous paint.

D. Grubbing:

1. Perform grubbing work beneath new roads, driveways, walks, seeded areas and other areas and as directed by the Engineer.

2. Grub out all sod, vegetation and other objectionable material to a minimum depth of I2 inches below the existing grade.

3. Completely remove all stumps, including major root systems.

E. Disposal:

1. Remove from the site and dispose of material not being burned.

2. Provide an approved disposal area unless otherwise specified.

F. Burning:

1. Dispose of combustible materials by burning only if approved by local and state officials.

2. Employ competent workmen to perform burning work in such a manner and at such locations that adjacent properties, trees and growth to remain, overhead cables, wires and utilities will not be jeopardized.

3. Do not leave fires unguarded.

4. Do not burn poison oak, poison ivy or other plants of similar nature.

5. Do not use tires or other combustible waste material to augment burning.

6. Burn combustible materials daily as the work progresses.

7. The Contractor shall be responsible for all damage caused by burning and shall be responsible for obtaining all necessary permits for burning.

3.3 REPLACEMENT OF MATERIALS

A. Paving, Curbing and Miscellaneous Material:

1. Remove all paving, subpaving, curbing, gutters, brick, paving block, granite curbing, flagging and minor structures that are over the area to be filled or excavated.

2. Remove and replace bituminous asphaltic and portland cement concrete in accordance with the appropriate sections of these Specifications.

3. Properly store and preserve all material to be replaced in a location approved by the Engineer.

B. Shrubs and Bushes:

1. Remove, store, and replace ornamental shrubs and bushes to be preserved in accordance with accepted horticultural practices.

C. Topsoil:

1. When applicable, carefully remove, store, and protect topsoil in accordance with the appropriate section of this division.

D. Responsibility:

1. Replace, at no additional cost to the Owner, materials lost or damaged because of careless removal or neglectful or wasteful storage, disposal or use of these materials.

END OF SECTION 31 10 00

SECTION 31 23 16 - EXCAVATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Perform the following items of work, as shown on the Drawings and specified herein:

1. Excavate and furnish all material necessary to establish suitable finished grades for subgrade preparation, cut slope or embankment construction, as required to complete the work of this Contract, including the furnishing and compaction of additional material as needed.

2. Completely remove from the site all excavated material which is not approved by the Engineer for use as embankment material. This provision does not apply to topsoil which will remain the property of the Owner.

3. Establish subgrades as indicated on the Drawings and specified hereunder.

4. Perform cutting and removal of existing pavements to the extent indicated on the Drawings and as required for the work under this Contract.

5. Protect all trees, shrubs and plantings not designated on the Drawings to be removed, for the duration of the Contract.

6. Protect all utilities on the site for the duration of the work.

B. Related Work Specified Elsewhere:

1. Quality Control

1.2 DEFINITIONS

A. The work involved includes removal, haul and disposal of materials to prepare for construction and the placing and compaction of material to construct embankments.

B. Excavation shall be designated as common, rock, unclassified or muck.

1. Common excavation shall consist of removal of earth, of boulders, solid mortared stone masonry and concrete masonry when each is less than two (2) cubic yards in volume and of rock which can be removed with ordinary excavating machinery. Grubbing shall be considered as common excavation.

2. Rock excavation shall consist of removal of solid rock which cannot be excavated without the use of explosives or ripping equipment and of boulders, solid mortared stone masonry and concrete masonry having a volume of two (2) cubic yards or more.

3. Unclassified excavation shall consist of removal of materials without consideration to their composition.

4. Muck excavation shall consist of excavation of soils and organic materials which are not suitable for use in embankment.

C. Embankment construction shall consist of constructing roadway embankments, including preparation of the areas upon which they are to be placed; site grading around buildings and structures; the construction of parking areas, lawns, berms, and dikes; the placing and compacting of approved material within areas where unsuitable material has been removed; and the placing and compacting of embankment material in holes, pits and other depressions within the roadway area or construction site limits.

D. Related Work Specified Elsewhere (When Applicable):

1. Stripping and Stockpiling of Topsoil; Trench Excavation-Earth; Trench Excavation-Ledge; Borrow and Bedding Material; Trench Backfilling, Compaction, Control and Testing; Temporary Erosion Control and Dewatering are specified elsewhere in this division.

1.3 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. All work shall be performed and completed in accordance with all local, state or federal regulations.

2. The General Contractor shall secure all necessary permits from, and furnish proof of acceptance by, the local and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.

B. Grade and Elevations:

1. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the contract installation.

C. Compaction:

1. The Contractor shall compact all embankment materials in accordance with this specification.

2. Density testing shall be performed by an Independent Testing Laboratory retained by the Owner and acceptable to the Engineer and Contractor.

3. Independent Testing Laboratory shall determine in place densities in accordance with ASTM D1556 or other methods approved by the Engineer.

4. Independent Testing Laboratory shall submit one (1) copy of the following reports to each of the following: Engineer, Resident Project Representative, Contractor;

   a. Test reports on material

   b. Field density test reports

   c. One moisture density curve for each type of soil encountered

5. Location of Tests: (OWNER WILL HANDLE ALL TESTING)

   a. One test per 300 feet of completed roadway subgrade just prior to placement of subbase gravels and additional tests at depths as required by the Engineer.

   b. Two tests on finished subgrade in parking area just prior to placing the subbase gravels and additional tests at depths as required by the Engineer.

6. If the test results fail to meet the requirements of these specifications, the Contractor shall correct the situation and obtain a passing test. The cost of reworking the material to obtain a passing test shall be borne by the Contractor and no allowance will be made for delays in the performance of the work. All testing and retesting shall be conducted by the Independent Testing laboratory. Costs of retesting will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.

1.4 JOB CONDITIONS

A. Disposition of Utilities:

1. The locations of utilities shown on the plans are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities within the project area.

2. Rules and regulations governing the respective utilities shall be observed in executing all work in this section. Active utilities shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable. If, in the progress of excavation, any utility should become damaged and result in any damage to public or private property, the General Contractor shall restore to the original condition, at no additional cost to the Owner, anything which has been damaged or disturbed.

PART 2 – PRODUCTS

2.1 DEFINITIONS OF GRAVEL, SAND, AND SILT CLAY

A. The terms "gravel", "coarse sand," "fine sand" and "silt-clay," as determinable from the minimum test data required in this classification arrangement and as used in subsequent word descriptions, are defined as follows:

1. Gravel - Material passing sieve with 75 mm (3-inch) square openings and retained on the 2.00 mm (No. 10) sieve.

2. Coarse Sand - Material passing the 2.00 mm (No. 10) sieve and retained on the 0.425 mm (No. 40) sieve.

3. Fine Sand - Material passing the 0.425 mm (No. 40) sieve and retained on the 0.075 mm (No. 200) sieve.

4. Silt-Clay (Combined silt and clay) - Material passing the 0.075 mm (No. 200) sieve.

5. Boulders (retained on 77 mm (3-inch) sieve) should be excluded from the portion of the sample to which the classification is applied, but the percentage of such material, if any, in the sample should be recorded.

6. The term "silty" is applied to fine material having plasticity index of ten (10) or less and the term "clayey" is applied to fine material having plasticity index of 11 or greater.

2.2 SOIL MATERIALS

A. Use of Excavated Material:

1. To the extent they are needed, all suitable materials from the specified excavation may be used in the construction of required embankment and slope protective devices (riprap).

2. Surplus excavated materials suitable for filling operations shall be stockpiled for future use as directed by the Owner's. This specific location will be determined at the start of construction.

3. Unsuitable material shall consist of grubbings or other materials which contain rock of size exceeding specifications, organic materials, or other materials of a deleterious nature as deemed by the Engineer. Silts, clays and granular materials with more than 8% passing the number 200 sieve shall be considered unsuitable for embankment in the Frost Penetration Zone under paved areas when sufficient water supply is available to cause heaving.

B. Common borrow shall consist of approved material required for the construction of embankments or for other portions of the work as designated and shall be obtained from a

source off-site, except as otherwise noted. Common borrow shall be free from frozen material, clay, perishable rubbish, peat, organic and other deleterious materials.

C. Gravel borrow shall be free of rocks with a maximum dimension over six inches, frozen material and other unsuitable material. That portion passing a three (3) inch square mesh sieve shall contain no more than 70% passing a ¼-inch mesh sieve and not more than 10% passing a number 200 mesh sieve.

D. Rock fill shall consist of rock for use in embankments which consists of hard durable particles broken to various sizes that will form a compact embankment with a minimum of voids. It shall contain no particles or fragments with a maximum dimension in excess of the compacted thickness of the layer being placed.

E. Embankment material shall consist of suitable approved common excavation and/or common, or gravel borrow. Rock excavation may be used as embankment material if it is thoroughly mixed with common excavation and/or common borrow to eliminate voids.

F. Crushed stone shall consist of clean, angular rock with a blended size range of 3/8" to 1 1/2".

PART 3 - EXECUTION

3.1 SAFETY

A. Comply with applicable local, state or federal safety regulations or in the absence thereof, with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc.

B. Provide shoring, sheeting and/or bracing at excavations as required to prevent cave-ins of excavation, and to assure complete safety of existing structures, utilities and pavements that are to remain in place.

C. Remove sheeting and shoring and bracing, as backfilling operations progress, taking all necessary precautions to prevent failure of excavation sides. Where sheeting is to be left in place, it shall not be within two (2) feet of subgrade.

3.2 COMMON EXCAVATION

A. The Contractor shall excavate material encountered to establish required grade elevations.

1. Unauthorized Excavation:

a. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at the Contractor's expense.

b. The Contractor shall backfill and compact unauthorized excavations as specified for authorized excavations of the same classification, unless otherwise directed by the Engineer.

2. Additional Excavation:

a. When excavation has reached required subgrade elevations, notify the Engineer who will make an inspection of conditions.

b. If unsuitable bearing materials are encountered at the required subgrade elevations, carry excavations deeper and replace the excavated material as directed by the Engineer.

c. Removal of unsuitable material and its replacement as directed will be paid on the basis of contract conditions relative to changes in work.

B. Common excavation areas shall be maintained in such condition that the excavation will be well drained.

C. Roadway excavation, in general, shall proceed in a direction upgrade. Subgrades shall be promptly rolled to prevent absorption of water.

3.3 EXCAVATION FOR UTILITY SERVICES

A. Water, telephone, data, fire alarm, storm drainage, electric services, utility structures, sanitary sewer piping, manholes, and catch basins will be installed under the work of the respective Sections.

3.4 MINIMUM LIMITS FOR EARTH EXCAVATION

A. Earth excavation must be carried to the following limits, unless otherwise indicated herein or on the drawings or authorized by the Engineer

1. Subgrades for site work shall be as follows:

a. Areas to receive topsoil - Four (4) inches below finish grades.

b. Utility structures - Bottom of structure or as shown on the site details and eighteen (18) inches outside wall extremities.

c. On-site bituminous concrete paved surfaces, as noted on the Drawings.

d. Off-site paved areas, as noted on the Drawings.

e. Unspecified site improvements - To bottom elevation of item plus ample working space on all sides.

2. In non-specified areas - To the lines indicated on the Drawings plus proper side clearance for construction.

3.5 ROCK EXCAVATION

A. In open excavations material will be classified as rock only when the following conditions prevail:

1. When the natural compound, natural mixture, and/or chemical element cannot be broken and removed from its existing position and state by a 3/4-yard backhoe or D8 dozer and requires the use of drills, or the use of explosives.

2. Boulders or old concrete foundations in excess of two (2) cubic yards.

3. Anything other is "earth" insofar as removal of the material to be excavated is concerned.

4. NOTE: When during the process of excavation, rock is encountered such material shall be uncovered and exposed, and the Engineer shall be notified by the Contractor, before proceeding further. The areas in question shall then be measured as stipulated in paragraph B, following. The Contractor shall not proceed with excavation of material claimed as rock until the material has been classified by the Engineer. Should the Contractor proceed with the excavation without notifying the Engineer, or prior to the survey, he shall forfeit his right to extra payment in the subject area.

B. The Contractor will provide qualified personnel, acceptable to both the Owner and the Engineer, to take cross-sections of rock before removal of same, and to provide computations of cross-sections and volumes within the pay-line limits.

B. Excavate rock, encountered in grading areas within the contract, to depths as follows:

1. Under pavements and surfaced areas - To six (6) inches below the required subgrade for such areas.

2. Under lawn areas - to two (2) feet below finished grade, unless approved otherwise by the Engineer.

D. Blasting - Obtain written permission and approval of method from the local authorities before proceeding with rock excavation. Explosives shall be stored, handled, and employed in accordance with the provisions of the "Manual of Accident Prevention in Construction: of the Associated General Contractors of America, Inc.

3.6 COLD WEATHER PROTECTION

A. Protect excavations against freezing when atmospheric temperature is less than 35 degrees F.

3.7 COMPACTION

A. General: Control soil compaction during construction to the satisfaction of the Engineer and/or Resident Project Representative by providing compaction to at least the minimum percentage of maximum density as specified for each area classification.

B. Conform to the recommendations of the geotechnical report.

C. Percentage of Maximum Density Requirements: Unless otherwise specified, compact soil to not less than the following percentages of maximum dry density for soils which exhibit a well-defined moisture density relationship (determined in accordance with ASTM D1557) and to not less than the following percentages of relative dry density (determined in accordance with ASTM D2049) for soils which do not exhibit a well- defined moisture density relationship.

1. Lawn or Vegetated Areas: Compact top six (6) inches of subgrade and each layer of backfill or fill material to 90 percent maximum dry density as determined by AASHTO T-180, Method C or D.

2. Pavements: Compact top 12 inches of excavation subgrade and each layer of fill material to 95 percent maximum dry density as determined by AASHTO T-180, Method C or D.

D. Moisture Control: Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material at a rate such that free water does not appear on surface during or subsequent to compaction operations.

E. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

F. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry.

3.8 EMBANKMENT

A. Compaction Equipment

1. Provide sufficient equipment units of suitable types to spread, level and compact fills promptly upon delivery of materials.

2. The Contractor may use any compaction equipment or device which he finds convenient or economical, but the Engineer retains the right to disapprove equipment which, in his opinion, is of inadequate capacity or unsuited to character of material being compacted.

3. The Contractor shall be responsible for the proper placement and compaction of backfill material. Any settlement that occurs shall be repaired by the Contractor at his own cost and expense. If pipeline and/or structures are damaged or displaced, they shall be repaired at the Contractor's expense.

B. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water.

C. Notify the Engineer when excavations are ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Engineer.

D. Place acceptable soil materials in layers to required subgrade elevations, for each area classification listed below.

1. In excavations, use satisfactory excavated or borrow material.

2. Under grassed areas, use satisfactory excavated or borrow material.

3. Under pavements, use satisfactory excavated or borrow material or combination of both.

E. Grub areas a depth of 12-inches where fills are to be less than five (5) feet in depth as shown on the Drawings.

F. When existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

G. Placement and Compaction: Place fill materials in layers no thicker than ten (10) inches.

H. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification.

I. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

J. Place backfill and fill materials evenly to required elevations adjacent to structures. Take care to prevent wedging action of fill against structures by carrying the material uniformly around structure to approximately the same elevation in each lift.

K. When water and sewer piping is laid in filled areas, place the fill before any pipe is placed, and compact as specified to a depth or not more than two (2) feet above the proposed top of the pipe. A trench shall then be excavated to the required grade, and of sufficient width to permit thorough tamping of the fill under the bells and around the pipe.

L. At the end of each day's work the embankment shall be shaped and rolled to minimize infiltration of water.

3.9 GRADING

A. General: Uniformly grade areas within limits of construction. Smooth finished surface within specified tolerances.

1. Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10 feet above or below the required subgrade elevations.

2. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than ½-inch above or below the required subgrade elevation.

3.10 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances in settled, eroded or rutted areas.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, reshape, and compact to required density prior to further construction.

3.11 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Removal from Owner's Property: Remove waste materials, including unacceptable excavated material, trash and debris, and dispose of it off the Owner's property. This provision does not apply to stockpiled topsoil which shall remain on site unless written authorization for its removal is provided by the Engineer.

END OF SECTION 31 23 16

SECTION 31 23 16.13 - TRENCHING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Trench excavation work in earth includes the removal of sand, gravel, existing sewers and manholes, ashes, loam, organics, clay, soft or disintegrated rock or hard pan existing sewers and manholes which can be removed with a backhoe, or a combination of such materials, and boulders measuring less than one (1) cubic yard for the installation of pipes, utilities and appurtenant structures.

2. All trench excavation shall be classed as earth or ledge.

B. Related Work - Specified Elsewhere:

1. Traffic regulation and pedestrian protection is specified in the appropriate division.

2. Clearing, removal and replacement of paving, trench excavation ledge, borrow and bedding, material, manholes, and catch basins, trench backfilling, compaction, control and testing, when applicable, are specified in the appropriate sections in this division.

3. Pipe and pipe fittings, valves, gates, and hydrants, when applicable, are specified the applicable sections.

1.2 JOB CONDITIONS

A. Utilities:

l. The locations of utilities shown on the plans are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities within the project area.

2. Rules and regulations governing the respective utilities shall be observed in executing all work in this section. Active utilities shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization from the Utility Company. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable. If, in the progress of excavation, any utility should become damaged and result in any damage to public or private property, the General Contractor

shall restore to the original condition, at no additional cost to the Owner, anything which has been damaged or disturbed.

B. Existing Structures:

1. Perform excavation in such a manner that will prevent any possibility of undermining and disturbing the foundations of any existing structures and any work previously completed under this Contract.

2. Where existing buildings and other structures are in proximity to the proposed construction, exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures, that may be required.

C. Repairing Damage:

1. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility company, the property owners and the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The Contractor shall not have any right of property in any suitable materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling.

C. Unsuitable Material:

1. If, in the opinion of the Engineer, the material encountered above the indicated grade, shown on the Drawings, for excavation is unsuitable material, remove the material to the widths and depths as directed by the Engineer. Replace this material as specified in the "Trench Backfilling, Compaction, Control and Testing" section of this division.

2. If, in the opinion of the Engineer, the material encountered at or below the grade shown on the Drawings for excavation is unstable material, remove the material to the full width of the trench and to a minimum depth of twelve inches below the pipe. Replace this material with thoroughly compacted suitably screened gravel bedding material.

3. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations acceptable to or designated by the Owner, at no additional cost to the Owner.

C. Embankment Material:

1. Obtain prior approval and instructions from the Engineer prior to undertaking the excavation for pipe placement of any fill material that has been in an embankment less than one year.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. General:

1. Unless otherwise specifically directed or permitted by the Engineer, begin excavation at the low end of sewer and storm lines and proceed upgrade.

2. Perform excavation for force mains and water mains in a logical sequence.

B. Amount of Excavation:

1. Trench width: As shown on the Drawings.

2. Trench depth: As shown on the Drawings.

3. Open Excavation:

a. The extent of open excavation shall be controlled by prevailing conditions.

b. Open excavation shall, at all times, be confined to the limits prescribed by the Engineer.

c. No trenches shall be left open during non-working hours unless adequate provisions are made to prevent injury to the work or persons. Appropriate barricades and warning devices shall be used to alert the public of hazardous areas.

4. Unauthorized Excavation:

a. Backfill to the specified grade, any excavation beyond the limits stated above and as shown on the Drawings (unless specifically ordered by the Engineer) with thoroughly compacted gravel borrow or screened gravel.

b. Backfilling unauthorized excavation shall be at no additional cost to the Owner.

C. Shoring and Bracing:

1. As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards.

END OF SECTION 31 23 16.13

SECTION 31 25 13 - EROSION CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The work under this section shall include provision of all labor, equipment, materials and maintenance of temporary erosion control devices as specified herein, as shown on the Drawings and as directed by the Engineer.

2. Erosion control measures shall be provided as necessary to correct conditions that develop prior to the completion of permanent erosion control devices or as required to control erosion that occurs during normal construction operations.

3. Construction operations shall comply with all federal, state and local regulations pertaining to erosion control.

4. After award of the Contract, prior to commencement of construction activities, meet with the Engineer to discuss erosion control requirements and develop a mutual understanding relative to details of erosion control.

B. Related Work Specified Elsewhere:

1. Site work is specified in appropriate sections of this Division.

2. Provisions stipulated in Environmental Protection.

C. Design Criteria:

1. Conduct all construction in a manner and sequence that causes the least practical disturbance of the physical environment. Protect existing vegetation designated to remain.

2. Stabilize disturbed earth surfaces in the shortest time and employ such temporary erosion control devices as may be necessary until such time as adequate soil stabilization has been achieved.

1.2 SUBMITTALS

A. The Contractor shall furnish the Engineer, in writing, his work plan giving proposed locations for storage of topsoil and excavated material before beginning construction. A schedule of work shall accompany the work plan. Acceptance of this plan will not relieve the Contractor of the responsibility of completion of the work as specified.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Baled Hay:

1. At least 14" by 18" by 30" securely tied to form a firm bale, staked as necessary.

B. Sand Bags:

1. Heavy cloth bags of approximately one cubic foot capacity filled with sand or gravel.

C. Mulches:

1. Loose hay, straw, peat moss, wood chips, bark mulch, crushed stone, wood excelsior, or wood fiber cellulose. Provide specified item by type and use as and where specified.

2. Type and use shall be as specified by the "Maine Erosion and Sedimentation Control Handbook for Construction - Best Management Practices" prepared by the Maine DEP and the Soil and Water Conservation Commission herein after referred to as the BMP.

D. Mats and Nettings:

1. Twisted Craft paper, yarn, jute, excelsior wood fiber mats, glass fiber and plastic film.

2. Type and use shall be as specified on the plan and consistent with the BMP manual.

E. Permanent Seed:

1. Conservation mix appropriate to the predominant soil conditions as specified in the BMP and subject to approval by the Engineer.

F. Temporary Seeding:

1. Use species appropriate for soil conditions and season as specified in the BMP and subject to approval by the Engineer.

G. Water:

1. The Contractor shall provide water and equipment to control dust, as directed by the Engineer.

H. Filter Fabrics:

1. Filter fabric shall be of one of the commercially available brands such as Mirafi, Typar or equivalent. Fabric types for particular applications shall be approved by the Engineer prior to installation.

I. Silt Fence:

1. Consistent with BMPs.

J. Bark Mulch Berm:

1. Consistent with BMPs.

K. Stone Check Dam:

1. Consistent with BMPs.

2.2 CONSTRUCTION REQUIREMENTS

A. Temporary Erosion Checks:

1. Temporary erosion checks shall be constructed in ditches and other locations as necessary. Stones shall be used for check dams as specified.

2. Baled hay or sediment barrier may be used to fit local conditions.

B. Temporary Berms:

1. Temporary barriers shall be constructed along the toe of embankments when necessary to prevent erosion and sedimentation.

C. Temporary Seeding:

1. Areas to remain exposed for a time exceeding 15 days shall receive temporary seeding per the current Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers or as depicted on the plans in the absence of Maine DEP standards.

D. Construct silt fence in accordance with details provided prior to soil disturbance.

E. Mulch All Areas Receiving Seeding: Use either wood cellulose fiber mulch (750 lbs/acre); or straw mulch with chemical tack (as per manufacturers' specifications). Wetting for small areas may be permitted. Biodegradable netting is recommended in areas to be exposed to drainage flow.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Temporary Erosion Checks:

1. Temporary erosion checks shall be constructed in ditches and at other locations designated by the Engineer. The Engineer may modify the Contractor's arrangement of silt fences, bales and bags to fit local conditions.

2. Baled hay, silt fences, or sandbags, or some combination, may be used in other areas as necessary to inhibit soil erosion.

3. Siltation fence, if called for in the plans, shall be located and installed as shown.

4. Sedimentation ponds shall be sited and constructed to the grades and dimensions as shown on the Drawings and will include drainage pipe and an emergency spillway.

B. Maintenance: Erosion control features shall be installed prior to excavation wherever appropriate. Temporary erosion control features shall remain in place and shall be maintained until a satisfactory growth of grass is established. The Contractor shall be responsible for maintaining erosion control features throughout the life of the construction contract. Maintenance will include periodic inspections by the Owner or Engineer for effectiveness of location, installation and condition with corrective action taken by the Contractor as appropriate.

D. Removing and Disposing of Materials:

1. When no longer needed, material and devices for temporary erosion control shall be removed and disposed of as approved by the Engineer.

2. When removed, such devices may be reused in other locations provided they are in good condition and suitable to perform the erosion control for which they are intended.

END OF SECTION 31 25 13

SECTION 31 32 19.23 - GEOTEXTILE LAYER SEPARATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Furnish all materials and install filter fabric of the types, dimensions and in the location(s) shown on the Drawings and specified herein.

B. Related Work Specified Elsewhere:

1. Temporary Erosion Control, Riprap and Stone Ditch Protection, and Gabions and Revet Mattresses are specified in the appropriate sections of this Division.

1.2 QUALITY ASSURANCE

A. A competent laboratory must be maintained by the manufacturer of the fabric at the point of manufacture to ensure quality control.

B. During all periods of shipment and storage, the fabric shall be wrapped in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, temperatures greater than 140°F, mud, dirt, dust and debris.

1.3 SUBMITTALS

A. Manufacturer shall furnish certified test reports with each shipment of material attesting that the fabric meets the requirements of this Specification.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Filter fabric for use in stabilization, drainage, underdrains, erosion control, landscaping and beneath structures shall be formed in widths of not less than six (6) feet and shall be as specified on the plans. In the absence of a plan call out, fabric shall meet the requirements of Table 1. Both woven and non-woven geotextiles are acceptable; however no "slit-tape" woven fabrics will be permitted for drainage, underdrain, and erosion control applications.

Table 1 - Geotextile Minimum

Mechanical Property	Test Method	Permissible Value
Grab Tensile Strength (both directions)	ASTM D4632	120 pounds
Grab Elongation	ASTM D4632-86	50 percent
CBR Puncture Strength	ASTM D6241	310 pounds
Trapezoid Tear Strength	ASTM D4533-85	60 pounds
Water Flow Rate	ASTM D4491-85	135 gal/min/sf
Equivalent Opening Size	ASTM D4751	80 (EOS)
Coefficient of Permeability	ASTM D4491-85	0.2 cm/sec
UV Resistance	ASTM D4355	70% Strength Retained

The geotextile shall have property values expressed in "typical" values that meet or exceed the values stated above as determined by the most recent test methods specified above.

B. Filter fabric for use in reinforcement and under riprap shall be as specified on the plans. In the absence of a plan callout, fabric shall meet the requirements of Table 2. Woven and non-woven geotextiles are acceptable.

Table 2 - Geotextile Minimum

Mechanical Property	Test Method	Permissible Value
Grab Tensile Strength (both directions)	ASTM D4632	200 pounds
Grab Elongation	ASTM D4632-86	15 percent
CBR Puncture Strength	ASTM D3787	700 pounds
Trapezoid Tear Strength	ASTM D6431	75 pounds
UV Resistance	ASTM D4355	70% Strength Retained
Equivalent Opening Size	ASTM D4751	between #20 and #100 (EOS) U.S. Std. Sieve number(s)

The geotextile shall meet or exceed the "typical" values stated above as determined by the most recent test methods specified above.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install geotextile as shown on the drawings or as directed in appropriate specifications in this division or in accordance with manufacturer's instructions or as directed by the Engineer.

END OF SECTION 31 32 19.23

SECTION 32 11 23 - AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The aggregate base and subbase courses for use below pavement shall be composed of layers of aggregate of different gradations.

B. Related Work Specified Elsewhere (When Applicable):

1. Excavation and Embankment, Bituminous Concrete Paving.

1.2 SUBMITTALS

A. Contractor shall certify that materials comply with the specification requirements by submitting either laboratory test results or certificates of compliance.

1.3 QUALITY ASSURANCE

A. Compact aggregate base and subbase course materials to a density of at least 95 percent of the maximum density as determined in accordance with ASTM D-1557, Method D.

B. Work shall be halted when the Engineer or Resident Project Representative is not satisfied with the apparent results of the Contractor's compaction operation. A testing laboratory acceptable to the Engineer shall then be obtained by the Owner to determine, by conducting density tests, if the Contractor is complying with these compaction specifications.

1. If the test results fail to meet the requirements of these Specifications, the Contractor shall undertake whatever action is necessary, to obtain the required compaction. The cost of the testing service will be borne by the Contractor and no allowance will be considered for delays in the performance of the work.

2. If the test results pass and meet the requirements of these Specifications, the direct invoice cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aggregate subbase course shall be gravel consisting of hard, durable particles which are free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the portion which will pass a three (3) inch sieve shall meet the grading requirements of the following tables:

Table 1 - Gradation Requirements - Aggregate Subbase Course:

Sieve Designation	Furnish only when specified Percent by Weight Passing Square Mesh Sieve Type D
½"	35-80
¼"	25-65
No. 40	0-30
No. 200	0-7.0

B. Aggregate for base shall be screened or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a three (3) inch sieve shall meet the grading requirements of the following table:

Table 2 - Gradation Requirement - Aggregate Base Course

Sieve Designation	Percent by Weight Passing Square Mesh Sieves Type A (Crushed) Aggregate	Type B (Screened) Aggregate
1/2"	45-70	35-75
1/4"	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

C. Gradation tests shall conform to AASHTO Method T-27, except that the material may be separated on the 1/2" sieve. The subbase shall not contain particles of rock which will not pass the six (6) inch square mesh sieve. Type A aggregate for base shall not contain particles of rock which will not pass the two (2) inch square mesh. Type B aggregate for base shall not contain particles of rock which will not pass the four (4) inch sieve. Type C aggregate for base shall not contain particles of rock which will not pass the six (6) square mesh sieve.

PART 3 - EXECUTION

3.1 PLACING

A. The subbase course may be constructed full depth in two (2) lifts provided compaction is achieved. Fine grading the lower layer will not be required.

B. Aggregate base course shall be placed full depth in one (1) lift.

3.2 SHAPING AND COMPACTING

A. All layers of aggregate subbase course shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed.

B. The Contractor shall bear full responsibility for and make all necessary repairs to the base and subbase courses and the subgrade until the full depth of the base and subbase courses is placed and compacted. Repairs shall be considered incidental to other contract items and shall be made at no cost to the Owner.

C. If the top of any layer of the aggregate base or subbase course becomes contaminated by degradation of the aggregate or addition of foreign materials, the contaminated material shall be removed and replaced with the specified material at the Contractor's expense.

D. The top of any aggregate subbase course layer shall be scarified and loosened for a minimum depth of one (1) inch immediately prior to the placing of the next layer of aggregate base course. This scarifying shall be considered incidental to placing the course, and no separate payment will be made.

3.3 SURFACE TOLERANCE

A. The completed surface of the aggregate base and subbase courses shall be shaped and maintained to a tolerance, above or below the required cross sectional shape, of 3/8" for aggregate base course and 1/2" for aggregate subbase.

END OF SECTION 32 11 23

SECTION 32 12 16 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Asphaltic concrete paving and surface sealer; wearing binder or base course.

1.2 RELATED SECTIONS

A. Section 32 11 23 - Aggregate Base and Subbase.

B. Section 31 23 16 – Excavation and Trenching.

1.3 REFERENCES

A. MS-2 - Asphalt Mix Design Methods; The Asphalt Institute (AI).

B. MS-3 - Asphalt Plant Manual - The Asphalt Institute (AI).

C. MS-8 - Asphalt Paving Manual - The Asphalt Institute (AI).

D. MS-19 - Basic Asphalt Emulsion Manual, The Asphalt Institute (AI).

E. Maine Department of Transportation (MaineDOT) Standard Specifications (November 2014, Edition)

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with AI Manual MS-8.

B. Mixing Plant: Conform to AI Manual MS-3.

C. Obtain materials from same source throughout.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when base surface temperature is less than 40°F, or surface is wet or frozen.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Aggregate for Binder Course Mix: MaineDOT 19 mm, unless otherwise noted.

B. Aggregate for Wearing Course Mix: MaineDOT 12.5 mm, unless otherwise noted.

C. Fine Aggregate: In accordance with MaineDOT standards.

2.2 ACCESSORIES

A. Tack Coat (if required): Homogeneous, medium curing, liquid asphalt. In accordance with MaineDOT standards.

2.3 ASPHALT PAVING MIX

A. Binder Course: in accordance to MaineDOT standard specifications.

B. Wearing Course: in accordance to MaineDOT standard specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that compacted aggregate base course is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.2 BASE

A. Section 32 11 23 - Aggregate Base Course forms the base construction for work of this Section.

3.3 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. Place binder course to specified compacted thickness.

B. Place wearing course to specified compacted thickness.

C. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

D. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.4 TOLERANCES

A. Flatness: Maximum variation of 1/8" measured with 10' straight edge.

B. Scheduled Compacted Thickness: Within 1/4".

C. Variation from True Elevation: Within 1/8".

3.5 PROTECTION

A. Prevent machinery from contracting finished pavement.

END OF SECTION 32 12 16

SECTION 32 17 23 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. This work shall consist of providing final reflective pavement lines and markings after paving (paint).

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pavement Marking Paint:

1. Ready-mixed white and yellow traffic paint shall conform to the requirements of AASHTO M248-74, Type N or F.

PART 3 - EXECUTION

3.1 GENERAL:

A. The Contractor shall apply all pavement markings in accordance with the latest edition of the Manual on Uniform Traffic Control Devices and within temperature and ambient conditions approved by the manufacturer.

B. Lines shall be provided as shown on the plans or directed by the Engineer.

3.3 PREPARATION OF SURFACE FOR PAVEMENT MARKING PAINT

A. The Contractor shall, immediately before applying pavement marking paint, ensure that the existing surface is dry and free from dirt, grease, oil or other foreign matter.

3.4 APPLICATION OF PAVEMENT MARKING PAINT

A. Paint shall be applied with a minimum wet thickness of 15 mm.

END OF SECTION 32 17 23

SECTION 32 90 00 – LANDSCAPE FINISHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to Work of this section.

1.2 SECTION INCLUDES

A. Restoration of disturbed areas with new or preserved plant material to replace removed, damaged, and dead plant material from within the work area. Work includes inventory and assessment of trees, shrubs, and flowering plants to be preserved or replaced, preparation of soil, placement of plant life, seed, sod, and fertilizer, mulching, watering, maintenance and warranty work.

1.3 QUALITY CONTROL

A. Nursery: Company specializing in growing and cultivating the plant life specified in this Section.

B. Sod Producer: Company specializing in sod production & harvesting; certified by the State of Maine.

C. Plant Materials: Comply with recommendations of ANSI Z60.1.

D. Maintenance Services: Performed by installer.

1.4 WARRANTY

A. Provide one year warranty, including one continuous growing season, under provisions of Section 01 00 00 including coverage of plants from death or unhealthy conditions.

B. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty beginning on date of replacement.

1.5 MAINTENANCE SERVICE

A. Maintain seeded areas or sodded areas and plant life immediately after placement until grass and plants are well established and exhibit a vigorous growing condition for two cuttings.

PART 2 - PRODUCTS

2.1 GRASS

A. Seed Mixture: As enumerated

B. Sod: ASPA Certified Nursery grown; cultivated grass sod; with strong fibrous root system.

C. Machine cut sod with minimum 1/2" and maximum 1" topsoil base.

2.2 TREES, PLANTS, AND GROUND COVER

A. Trees Plants and Ground Cover: Species and size as indicated by observing and collecting inventory of existing plants within work area, and replacement sizes as recommended by horticultural vendor, grown in climatic conditions similar to those in locality of the Work.

B. Provide balled and burlapped trees and shrubs.

2.3 SOIL AND SOIL MODIFICATION MATERIALS

A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, free of subsoil, clay or impurities, plants, weeds and roots.

B. Fertilizer: Fifty percent of the elements derived from organic sources, to the following proportions: Nitrogen 5 percent, phosphoric acid 10 percent, soluble potash 5 percent.

2.4 FINISH MATERIALS

A. Wood Pegs: Softwood, sufficient size and length to ensure anchorage of sod on slope.

B. Mesh: Interwoven biodegradable fiber.

C. Edging: Decay resistant wood, treated softwood or redwood.

D. Drip Strip Stone: Washed natural stone, 3/4" to 1-1/2" size.

E. Mulch: Dark Pine Brown native bark

F. Weed Barrier: 4 oz, woven, needle punched polypropylene fabric.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that required underground utilities are in proper location.

B. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas. Remove stones over 1-1/2" in any dimension. Remove sticks, roots, rubbish and other extraneous matter.

C. Scarify subsoil to a depth of 3".

3.2 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 4 inches compacted thickness. Rake smooth.

B. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

C. Place topsoil into pits and beds intended for plant root balls to a minimum thickness of 6".

D. Apply fertilizer in accordance with manufacturer's instructions.

3.3 SEEDING

A. Apply seed or Hydroseed with a seed slurry at a rate of 4 lb/1000ft^2 evenly in two intersecting directions.

B. Immediately following seeding, apply agricultural mulch to a loose thickness of 1-1/2".

C. Apply water with a fine spray immediately after each area has been mulched.

3.4 MULCHING

A. Place mulch over weed barrier to uniform thickness (3" minimum).

C. On slopes 1:2 and steeper, place mesh over finished surface.

3.5 PLANTING

A. Set plants in pits or beds partly filled with prepared topsoil mixture. Backfill with topsoil mixture.

B. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

C. Stake and guy trees immediately after planting.

D. Mulch trees and shrubs with 3" minimum thickness of bark mulch.

E. Apply anti-desiccant agent to plantings.

F. Prune trees and shrubs in accordance with horticultural practice.

3.6 MAINTENANCE

A. Mow grass at regular intervals to maintain maximum height of 2-1/2". Do not cut more than 1/3 of grass blade at any one mowing.

B. Water to prevent grass and soil from drying out.

C. Control growth of weeds. Apply treatments in accordance with manufacturer's instructions and Owner's policies.

END OF SECTION 32 90 00

SECTION 32 92 19 - SEEDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish, place, and test topsoil, seed, lime, and fertilizer where shown on the drawings and protect and maintain seeded areas disturbed by construction work, as directed by the Engineer.

B. Related Work Specified Elsewhere (When Applicable): Earthwork, excavation, backfill, compaction, site grading and temporary erosion control are specified in the appropriate Sections of this Division.

1.2 SUBMITTALS AND TESTING

A. Seed:

1. Furnish the Engineer with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered to the project site is fully labeled in accordance with the Federal Seed Act and is at least equal to the specification requirements.

2. This certification shall appear in, or with, all copies of invoices for the seed.

3. The certification shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates and certificates have been approved.

4. Each lot of seed shall be subject to sampling and testing, at the discretion of the Engineer, in accordance with the latest rules and regulations under the Federal Seed Act.

B. Topsoil:

1. Inform the Engineer, within 30 days after the award of the Contract, of the sources from which the topsoil is to be furnished.

2. Obtain representative soil samples, taken from several locations in the area under consideration for topsoil removal, to the full stripping depth.

3. Have soil samples tested by an independent soil testing laboratory, approved by the Engineer, and directed by owner at owners expense.

4. Have soil samples tested for physical properties and pH (or lime requirement), for organic matter, available phosphoric acid, and available potash, in accordance with standard practices of soil testing.

5. Approval, by the Engineer, to use topsoil for the work will be dependent upon the results of the soils tests.

C. Lime & Fertilizer:

1. Furnish the Engineer with duplicate copies of invoices for all lime and fertilizer used on the project showing the total minimum carbonates and minimum percentages of the material furnished that pass the 90 and 20 mesh sieves and the grade furnished.

2. Each lot of lime and fertilizer shall be subject to sampling and testing at the discretion of the Engineer.

3. Sampling and testing shall be in accordance with the official methods of the Association of Official Agricultural Chemists.

4. Upon completion of the project, a final check may be made comparing the total quantities of fertilizer and lime used to the total area seeded. If the minimum rates of application have not been met, the Engineer may require the Contractor to distribute additional quantities of these materials to meet the minimum rates.

1.3 DELIVERY, STORAGE & HANDLING

A. Seed:

1. Furnish all seed in sealed standard containers, unless exception is granted in writing by the Engineer.

2. Containers shall be labeled in accordance with the United States Department of Agriculture's rules and regulations under the Federal Seed Act in effect at the time of purchase.

B. Fertilizer:

1. Furnish all fertilizer in unopened original containers.

2. Containers shall be labeled with the manufacturer's statement of analysis.

1.4 JOB CONDITIONS

A. Topsoil: Do not place or spread topsoil when the subgrade is frozen, excessively wet or dry, or in any condition otherwise detrimental, in the opinion of the Engineer, to the proposed planting or to proper grading. Do not use excessively wet topsoil.

B. Seeding:

1. Planting Seasons: The recommended seeding time is from April 1 to September 15. The Contractor may seed at other times. Regardless of the time of seeding, the Contractor shall be responsible for each seeded area until it is accepted.

2. Weather Conditions:

   a. Do not perform seeding work when weather conditions are such that beneficial results are not likely to be obtained, such as drought, excessive moisture, or high winds.

   b. Stop the seeding work when, in the opinion of the Engineer, weather conditions are not favorable.

   c. Resume the work only when, in the opinion of the Engineer, conditions become favorable, or when approved alternate or corrective measures and procedures are placed into effect.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Seed:

1. Provide the grass or plant material seed mixture specified on the drawings. When unspecified, provide a mix approved by the Engineer, having the following composition:

   a. Roadside Mixture:
      50 percent Creeping Red Fescue
      15 percent Kentucky Bluegrass
      5 percent White Clover
      2 percent Red Top
      3 percent Birdsfoot Trefoil
      25 percent Annual Ryegrass

   b. Alternate Mixture:
      50 percent Creeping Red Fesque
      30 percent Kentucky Bluegrass
      20 percent Annual Ryegrass

2. Do not use seed which has become wet, moldy, or otherwise damaged in transit or during storage.

B. Topsoil:

1. Provide the quantity of topsoil necessary, in the opinion of the Engineer, to complete the work.

2. Provide topsoil that is natural, friable clay-loam soil possessing the characteristics of representative soils in the vicinity which produce heavy growths of crops, grass, or other vegetation.

2. Provide topsoil which is reasonably free from subsoil, brush, objectionable weeds, other litter, clay lumps, stones, stumps, roots, objects larger than 2" in diameter, and toxic substances which might be harmful to plant growth or be a hindrance to grading, planting, and maintenance operations.

4. Obtain topsoil from naturally well drained areas.

C. Lime:

1. Provide lime which is ground limestone containing not less than 85% of total carbonate and of such fineness that 90% will pass a No. 20 sieve and 50% will pass a No. l00 sieve.

2. Coarser materials will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing a No. l00 sieve. No additional payment will be made to the Contractor for the increased quantity.

D. Fertilizer:

1. Provide a commercial fertilizer approved by the Engineer.

2. Provide fertilizer containing the following minimum percentage of nutrients by weight:
10 % Available phosphoric acid
10 % Available potash
10 % Available nitrogen (75% of the nitrogen shall be organic)

PART 3 - EXECUTION

3.1 PREPARATION

A. Equipment:

1. Provide all equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials.

2. Demonstrate to the Engineer that the equipment will apply materials at the specified rates.

B. Soil: Perform the following work prior to the application of lime, fertilizer or seed.

1. Scarify the subgrade to a depth of 2" to allow the bonding of the topsoil with the subsoil.

2. Apply topsoil to a depth of 4" or as directed on areas to be seeded.

3. Trim and rake the topsoil to true grades free from unsightly variations, humps, ridges or depressions.

4. Remove all objectionable material and form a finely pulverized seed bed.

3.2 PERFORMANCE

A. Grading:

1. Grade the areas to be seeded as shown on the Drawings or as directed by the Engineer.

2. Leave all surfaces in even and properly compacted condition.

3. Maintain grades on the areas to be seeded in true and even conditions, including any necessary repairs to previously graded areas.

B. Placing Topsoil:

1. Uniformly distribute and evenly spread topsoil on the designated areas.

2. Spread the topsoil in such a manner that planting work can be performed with little additional soil preparation or tillage.

3. Correct any irregularities in the surface resulting from topsoiling or other operations to prevent the formation of depressions where water may stand.

4. Thoroughly till the topsoil to a depth of at least 3" by plowing, discing, harrowing, or other approved method until the condition of the soil is acceptable to the Engineer.

C. Placing Fertilizer:

1. Distribute fertilizer uniformly at a rate determined by the soils test over the areas to be seeded.

2. Incorporate fertilizer into the soil to a depth of at least 3" by discing, harrowing, or other methods acceptable to the Engineer.

3. The incorporation of fertilizer may be a part of the tillage operation specified above.

4. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will be acceptable.

D. Placing Lime:

1. Uniformly distribute lime immediately following or simultaneously with the incorporation of fertilizer.

2. Distribute lime at a rate determined from the pH test, to a depth of at least 3" by discing, harrowing, or other methods acceptable to the Engineer.

E. Seeding:

1. Level out any undulations or irregularities in the surface resulting from tillage, fertilizing, liming or other operations before starting seeding operations.

2. Hydroseeding:

a. Hydroseeding may be performed where approved and with equipment approved by the Engineer.

b. Sow the seed over designated areas at a minimum rate of 5 lbs per 1000 ft^2.

c. Seed and fertilizing materials shall be kept thoroughly agitated in order to maintain a uniform suspension within the tank of the hydroseeder.

d. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates.

3. Drill Seeding:

a. Drill seeding may be performed with approved equipment having drills not more than 2" apart.

b. Sow the seed uniformly over the designated areas to a depth of l/2" and at a rate of 5 lbs per l,000 ft^2.

4. Broadcast Seeding:

a. Broadcast seeding may be performed by equipment approved by the Engineer.

b. Sow the seed uniformly over the designated areas at a rate of 5 pounds per l,000 square feet.

c. Sow half the seed with the equipment moving in one direction and the remainder of the seed with the equipment moving at right angles to the first sowing.

d. Cover the seed to an average depth of l/2" by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved devices.

e. Do not perform broadcast seeding work during windy weather.

F. Compacting:

1. Seeded areas must be raked lightly after sowing unless seeding is to be directly followed by application of an approved mulch.

2. Compact the entire area immediately after the seeding operations have been completed.

3. Compact by means of a cultipacker, roller, or other equipment approved by the Engineer weighing 60 to 90 lbs per linear foot of roller.

4. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, use a pneumatic roller (not wobbly wheel) that has tires of sufficient size to obtain complete coverage of the soil.

5. When using a cultipacker or similar equipment, perform the final rolling at right angles to the prevailing slopes to prevent water erosion, or at right angles to the prevailing wind to prevent dust.

3.3 PROTECTION & MAINTENANCE

A. Protection:

1. Protect the seeded area against traffic or other use.

2. Erect barricades and place warning signs as needed.

B. Maintenance:

1. Properly care for the seeded areas during the period when the grass is becoming established.

2. The protection period shall extend for I2 months after the completion of the entire project, unless the desired cover, in the opinion of the Engineer, is established in a shorter period of time.

3.4 ACCEPTANCE

A. At final acceptance of the project all areas shall have a close stand of grass with no weeds present and no bare spots greater than three inches (3") in diameter over greater than five percent (5%) of the overall seeded area.

END OF SECTION 32 92 19

SECTION 33 05 13 - MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Construct precast manholes, covers, frames, brick masonry, precast of field constructed inverts and apply waterproofing in conformance with the dimensions, elevations, and locations shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere (when applicable):

1. Final sewer testing is specified in this Division.

2. Pipe, excavation, backfill, paving and dewatering are specified in the appropriate Sections in this Division. Concrete and grout shall comply with the provisions of this section and as modified per the Engineer.

1.2 QUALITY ASSURANCE

A. Precast Manhole Base, Barrel and Top Sections:

1. Conform to ASTM C478-97 except as modified herein, and on the Drawings.

2. Average strength of 4,000 psi at 28 days.

3. Testing:

a. Determine concrete strength by tests on six (6) inch by 12-inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.

b. Have tests conducted at the manufacturer's plant or at a testing laboratory approved by the Engineer.

c. Have not less than two (2) tests made for each 100 vertical feet of precast manhole sections.

B. Manhole Steps

1. Acceptable Manufacturers:

a. Aluminum Company of America.

b. Reliance Steel Products, Inc.

c. M. A. Industries, Inc.

d. Or equivalent.

C. Frames and Covers:

1. Acceptable Manufacturers:

a. Etheridge Foundry Co.

b. Neenah Foundry Co.

c. E. L. LeBaron Foundry Company.

d. Or equivalent.

D. Masonry:

1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick. (AASHTO M91-78).

2. Cement: ASTM C-150 (AASHTO M85-79I).

3. Hydrated Lime: ASTM C-207

4. Sand: ASTM C33 (AASHTO M6-65 (1974)).

E. Waterproofing:

1. Acceptable Manufacturers:

a. Minwax Fibrous Brush Coat, Minwax Co., N.Y., N.Y.

b. Tremco 121 Foundation Coating, Tremco Mfg. Co., Newark, N.J.

c. Or approved equal.

1.3 SUBMITTALS TO THE OWNER/ARCHITECT/ENGINEER

A. Submit shop drawings and manufacturer's literature in conformance with the Contract Documents.

B. Precast Manhole Sections: Field verify angles, dimensions, and elevations prior to casting. Submit test results and receive approval from the Engineer prior to delivery to the site.

PART 2 - PRODUCTS

2.1 PRECAST MANHOLE SECTIONS

A. Dimensions, shall be as shown on the Drawings:

1. Base & Riser Sections:

a. Diameter: As shown on the Drawings.

b. Length: As required.

c. Wall Thickness: Not less than five (5) inches.

d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.

e. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

2. Tops:

a. Diameter: Eccentric cone type, 24 inches I.D. at top, 48 inches I.D. at bottom unless otherwise shown on the Drawings.

b. Length: four (4) feet.

c. Wall thickness: Not less than five (5) inches at the base, tapering to not less than eight (8) inches at the top.

d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.

e. Exterior face of cone sections shall not flare out beyond the vertical.

f. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

3. Flat Slab Tops:

a. Location: Where shallow installations do not permit the use of a cone-type top and where indicated on the Drawings.

b. Slab thickness: Not less than six (6) inches.

c. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

B. Openings:

1. Provide openings in the risers to receive pipes entering the manhole.

2. Make openings at the manufacturing plant.

3. Size: To provide a uniform annular space between the outside wall of pipe and riser.

4. Location: To permit setting of the entering pipes at the correct elevations.

5. Openings shall have a flexible watertight union between pipe and the manhole base.

    a. Cast into the manhole base and sized to the type of pipe being used.

    b. Type of flexible joint being used shall be approved by the Engineer. Install materials according to the Manufacturer's instructions.

        1. Lock Joint Flexible Manhole Sleeve made by Interpace Corporation.

        2. Kor N Seal made by National Pollution Control System, Inc.

        3. Press Wedge II made by Press-Seal Gasket Corporation.

        4. A-Lok Manhole Pipe Seal made by A-Loc Corporation.

        5. Or equivalent.

C. Joints:
Joint gaskets to be flexible self-seating butyl rubber joint sealant installed according to manufacturer's recommendations. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer. Acceptable Materials:

    a. Kent-Seal No. 2

    b. Ram-Nek

    c. Or equivalent.

Joints between precast sections shall conform to related standards and manufacturer's instructions. Provide two rings of sealant at each joint. All manholes greater than six (6) ft. diameter and all manholes used as wet wells, valve pits and other dry-pit type structures shall be installed with exterior joint collars. The joint collar shall be installed according to the manufacturer's instructions. Acceptable materials:

    a. MacWrap exterior joint sealer as manufactured by Mar-Mac Manufacturing Company.

    b. Or equivalent.

D. Waterproofing:

1. The exterior surface of all manholes shall be given two (2) coats of bituminous waterproofing material at an application rate of 75 to 100 square feet per gallon, per coat.

2. The coating shall be applied after the manholes have cured adequately and can be applied by brush or spray in accordance with the manufacturer's written instruction. Sufficient time shall be allowed between coats to permit sufficient drying so that the application of the second coat has no effect on the first coat.

F. Frost Protective Wrapping:

1. The frost protective wrap shall be constructed of an ultraviolet resistant polyethylene material and shall be a minimum thickness of six (6) mils.

2.2 FRAMES AND COVERS

A. Standard Units:

1. Made of cast iron conforming to ASTM A48-76, Class 30 minimum.

2. Have machined bearing surfaces to prevent rocking.

3. Castings shall be smooth with no sharp edges.

4. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

5. Dimensions and Style shall conform to the Drawings, Standard castings differing in non-essential details are subject to approval by the Engineer:

a. Covers - solid with "SEWER" in three (3) inch letters diamond pattern.

b. Frame - 24-inch diameter clear opening, with flange bracing ribs.

6. Minimum weight of frame and cover shall be 430 lbs.

B. Water Tight Units:

1. Same features as above for Standard Units, with 22-inch diameter minimum clear opening.

2. Sealing features:

a. Inner lid held by a bronze tightening bolt in a locking bar.

b. Neoprene gasket

c. Water tight pick hole.

3. Minimum weight of frame and cover shall be 510 lbs.

2.3 MANHOLE STEPS

A. Aluminum or polyethylene or polypropylene coated steel safety type designed with a minimum concentrated live load of 300 pounds.

B. Thoroughly clean all surfaces to be embedded with a suitable cleaning agent to ensure that the surfaces are free from all foreign matter such as dirt, oil and grease.

C. Aluminum surfaces to be embedded shall be given a protective coating of an approved heavy-bodied bituminous material. The steps shall become thoroughly dry before being placed into the concrete.

D. All steps shall be factory cast into walls of the precast section so as to form a continuous ladder with a distance of 12-inches between steps.

2.4 MASONRY

A. Brick:
1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.

2. Immediately remove rejected brick from the work.

C. Mortar:

1. Composition (by volume):

a. One (1) part Portland Cement.

b. 1/2 part hydrated lime.

c. 4-1/2 parts sand.

2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed three (3) times the sum of the volume of cement and lime.

C. Cement shall be Type II Portland Cement.

D. Hydrated lime shall be Type S.

D. Sand:

1. Shall consist of inert natural sand.

2. Grading:

Sieve	Percent Passing
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 50	10-30
No. 100	2-10
Fineness Modulus	2.3 - 3.1

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Manhole Sections:

1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.

2. Install riser sections and tops level and plumb.

3. Make all joints watertight.

4. When necessary, cut openings carefully to prevent damage to barrel sections and tops. Solidly fill annular spaces around pipes entering the manholes with non-shrink grout or sealant approved by the Engineer. Replace damaged manhole sections and tops at no additional cost to the Owner.

5. When manhole steps are included in the Work, install barrel sections and tops so that steps are in alignment.

B. Drop Manholes:
The difference in elevation between the invert of the inlet pipe to the invert of the outlet pipe shall not exceed 24 inches without use of a drop structure. Where difference in elevation exceeds 24 inches, construct a drop manhole as shown on the Drawings or as directed by the Engineer. Drop manholes shall be external assemblies unless otherwise noted.

B. Adjust to Grade:

1. Adjust tops of manholes to grade with brick masonry.

2. Concrete rings are not acceptable for adjusting to grade.

D. Pipe Connections to Manholes: Connect pipes to manholes with joint design and materials approved by the Engineer.

E. Invert Channels:

1. Smooth and semicircular in shape conforming to the inside of the adjacent sewer section.

2. Make changes in direction of flow with smooth curves having a radius as large as permitted by the size of the manhole.

3. Stop the pipes at the inside face of the manhole where changes of direction occur.

4. Form invert channels with brick.

5. Shape invert to make smooth transition in vertical grade.

6. Slope the floor of the manhole to the flow channel, as shown on the Drawings

7. Precast inverts where used shall be reinforced and depicted on shop drawings.

F. Masonry:

1. Laying Brick:

a. Use only clean bricks in brickwork for manholes.

b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.

d. Construct all joints in a neat workmanlike manner. Construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.

e. Outside faces of brick masonry shall be plastered with mortar from ¼-inch to 3/8-inch thick.

f. Completed brickwork shall be watertight.

2. Curing:

a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.

b. Protect brick masonry from the weather and frost as required.

G. Frames and Covers:

1. Set all frames in a full bed of mortar, true to grade and concentric with the manhole opening.

2. Completely fill all voids beneath the bottom flange to make a watertight fit.

3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the manhole all around its circumference.

4. Clean the frame seats before setting the covers in place.

G. Plugging and Patching:

1. Fill all exterior cavities with non-shrink grout and with bituminous waterproofing once the concrete and mortar has set.

2. Touchup damaged water proofing.

I. Cleaning:
Thoroughly clean manholes, steps, frames and covers of all debris and foreign matter.

J. Bedding and Backfilling:

1. Bedding of manholes shall be 6 inches of 3/4" screened stone.

2. Backfill a minimum of 18 inches all around manhole with crushed stone.

K. Frost Protective Wrap:

1. The Contractor shall comply with the manufacturer's instructions for the particular conditions of installations in each case.

2. Clean each manhole exterior of all dirt and remove any sharp protrusions.

3. Apply two (2), six (6) inch wide vertical strips of bituminous waterproofing material and/or duct tape from the top to bottom of the manhole per layer.

4. Prior to installing pipe through each manhole or valve pit, wrap each manhole to the maximum depth of frost penetration, but not less than five (5) feet below grade, with four (4) layers of the polyethylene material by beginning the wrap at the adhesive strip and proceeding around the manhole, valve pit, etc., continuously by overlapping the adhesive strip by 24 inches on the final layer. Cut the polyethylene wrap in areas where piping exits the manhole. The size of the cut is to be equivalent to the pipe's outside diameter.

5. Tuck and pleat the polyethylene wrap at the top of each manhole in a continuous manner, minimizing the size of each fold. Extend the polyethylene wrap past the top of the manhole frame and temporarily tuck the remainder inside the frame, until final backfill and paving.

6. In paved areas, cut the polyethylene wrap flush with the manhole rim after the pavement is in place.

7. In unpaved areas, pull the polyethylene wrap together, and tie around frame with galvanized wire.

8. Protect the installed frost barrier from harmful weather exposures and from possible physical abuses, where possible by prompt installation of concealing work or, where that is not possible, by temporary covering or enclosure.

9. Backfill around the manhole/frost barrier with material as outlined in J.

3.2 MANHOLE TESTING

A. General:

1. Perform vacuum testing on all manholes.

2. All testing must be performed in the presence of the Engineer.

3. Suitably plug all pipes entering each manhole and brace plugs to prevent blow out.

B. Vacuum Test:

1. The manhole shall be tested by a vacuum test after assembly of the manhole, connection piping and backfilling.

2. Plug all lifting holes completely with non-shrink grout.

3. Properly tighten all boot clamps and brace all plugs to prevent them from being sucked into the manhole.

4. Install the testing equipment according to the manufacturer's instructions.

5. A vacuum of 10 inches of Hg shall be drawn on the manhole and the loss of one (1) inch of Hg vacuum timed. The manhole shall be considered to have passed the test if the time for the loss of 1 inch Of Hg vacuum is two (2) minutes or longer.

6. If the manhole fails the initial test, the Contractor shall locate the leak(s) and make repairs. The manhole shall be retested until a satisfactory test result is obtained.

7. If a satisfactory vacuum test cannot be obtained, the manhole shall be water exfiltration tested and repaired as necessary.

C. Manhole Repairs:

1. Correct leakage by reconstruction, replacement of gaskets and/or other methods as approved by the Engineer.

2. The use of lead-wool or expanding mortar will not be permitted.

D. After the manholes have been backfilled and prior to final acceptance, any signs of Leaks or weeping visible inside the manholes shall be repaired and the manhole made watertight.

END OF SECTION 33 05 13

SECTION 33 42 13 - PIPE CULVERTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Provide and install culvert, surface drain, and storm drain pipe and sections of the type(s), size(s) and in the location(s) shown on the Drawings and as specified herein.

B. Related Sections:

1. Section 31 23 16 – Excavation

2. Section 31 23 16.13 – Trenching

3. Section 31 32 19.23 - Geotextile Layer Separation

4. Section 33 46 00 – Subdrainage

5. Section 33 49 13 - Storm Drainage Manholes, Frames and Covers

1.2 SUBMITTALS

A. Submit, in duplicate, sworn certificates of inspections and tests performed at the location of manufacturers.

B. Submit Shop Drawings in accordance with the General Conditions of the Construction Contract.

1.3 DELIVERY, STORAGE AND HANDLING

A. Exercise care when handling pipe to prevent damage of any nature to pipe and finish.

B. Immediately remove damaged materials and replace in kind at no additional cost to the Owner.

C. Store materials above ground on platforms, skids or other adequate supports.

1.4 FIELD QUALITY CONTROL

A. Acceptance will be based on material tests and inspection of the complete product.

B. Inspection may be made at the place of manufacture, local distributor or on the construction site after delivery. All Pipe Culvert materials are subject to rejection at any time throughout the project due to failure to meet specifications.

C. No damaged or rejected pipes are to be installed permanently for the Work. Contractor must immediately remove all rejected or damaged pipe culvert materials from the project site if not needed to complete the Work. Contractor is responsible for replacing damaged or rejected pipe materials at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe shall be one of the following as specified on the Drawings; substitutions are only allowed with the approval of the Engineer.

1. Corrugated Aluminum Alloy Pipe
2. Aluminum Coated (Type 2) Corrugated Steel Pipe
3. Zinc-Coated (Galvanized) Corrugated Steel Pipe
4. Steel Structural Plate Pipe
5. Aluminum Alloy Structural Plate Pipe
6. Polymer Precoated, Galvanized Corrugated Steel Pipe
7. Polyvinyl Chloride (PVC) Pipe
8. Corrugated Polyethylene (PE) and High Density Polyethylene (HDPE) Pipe
9. Reinforced Concrete Pipe

B. Materials for pipes shall conform to AASHTO Standards.

1. Corrugated Aluminum Alloy Pipe. This pipe and special fittings such as elbows, tees and wyes shall conform to the requirements of AASHTO M196, Type I or II. Special sections, such as elbows and metal end sections shall be of the gage called for in the Contract Documents and shall conform to the applicable requirements of AASHTO M196. Aluminum sheet shall conform to the requirements of AASHTO M197.

2. Aluminum Coated (Type 2) Corrugated Steel Pipe. This pipe shall conform to the requirements of AASHTO M36 using steel sheet conforming to AASHTO M274.

3. Zinc - Coated (Galvanized) Corrugated Steel Pipe. This pipe shall conform to the requirements of AASHTO M36 using steel sheet conforming to AASHTO M218.

4. Steel Structural Plate Pipe. Plates, bolts, nuts and other accessories shall conform to the requirements of AASHTO specification M167 and the following additional requirements:

   a. All shop welding shall meet the requirements of the latest edition of AWS D1.1, Structural Welding Code - Steel.

   b. Annually the fabricator shall have quality control tests performed on uncoated random samples of the lightest and heaviest gage plates produced by welding. The sampling and testing shall be done by a recognized independent testing agency and copies of the test reports, including all welding parameters, shall be submitted to the Engineer as requested.

   c. No field welding will be allowed.

5. Aluminum Alloy Structural Plate Pipe. Plates, bolts and nuts for this pipe shall conform to the requirements of AASHTO M219.

6. Polymer Precoated, Galvanized Corrugated Steel Pipe. This pipe and special fittings such as elbows, tees and wyes shall conform to the requirements of AASHTO M245, Type I, with Type B coating for the pipe as specified in AASHTO M246 with the thinner coating on the outside.

7. Polyvinyl chloride (PVC) Pipe. This pipe and fittings shall conform to the requirements of AASHTO M278. All pipe shall be supplied with gasket type joints meeting the requirements of ASTM D3212.

8. Corrugated polyethylene (PE & HDPE) pipe. This pipe and fittings shall conform to the requirements of AASHTO M252 and AASHTO M294.

9. Reinforced Concrete Pipe. This pipe shall conform to the requirements of AASHTO M170, (ASTM C76) except paragraph 6.2. Elliptical pipe shall conform to the requirement of AASHTO M207, except paragraph 6.2. Unless otherwise specified, pipe wall design and use of elliptical reinforcement in circular pipe are optional. Pipe arch shall conform to the requirements of AASHTO M206, except paragraph 6.2. Aggregates shall meet the requirements of MDOT Standard Specifications Subsections 703.01 and 703.02 for fine aggregates and coarse aggregates respectively, except that grading requirements are hereby waived. Precast reinforced concrete special sections shall conform to the requirements of the cited specifications to the extent to which they apply.

C. Area Drain Assemblies. Unless otherwise noted, provide Nyloplast Inline Drain with 8" Bronze Insert Grate. Drain Basin not required.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas to receive piping for the following

1. Obstructions that adversely affect the installation and quality of the work.

2. Deviations beyond allowable tolerances for clearances.

B. Examine pipe and fittings before installation to assure no defective materials are incorporated into the Work.

C. Start the work only when conditions are satisfactory.

D. Remove and replace all defective materials at no additional cost to the Owner.

3.2 INSTALLATION

A. Do not install pipe, nor backfill, between December 15th and April 1st without the written permission of the Engineer.

B. Begin laying the pipe at the downstream end. Install bells upstream per manufacture's recommendations.

C. Place metal pipe with the longitudinal laps of seams at the sides and the outside laps of circumferential joints pointing up grade.

D. Lay paved or partially lined pipe with the lining on the bottom.

E. Join flexible pipe sections and metal end sections by coupling bands as recommended by the manufacturer.

F. Assemble the plates for structural plate arches according to the manufacturer's assembly instructions and as shown on the Drawings.

G. Place geotextile and armor stones at inlets and outlets as indicated in the Drawings.

END OF SECTION 33 42 13

SECTION 33 46 00 - SUBDRAINAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Underdrain system for paved sections and building perimeter.

1.2 RELATED SECTIONS

A. Section 31 05 16 - Aggregates for Earthwork

B. Section 31 23 16.13 - Trenching

C. Section 31 32 19.23 - Geotextile Layer Separation

1.3 REFERENCES

A. ASTM D2729 – Poly(vinyl chloride) (PVC) Sewer Pipe and Fittings.

1.4 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.5 PROJECT RECORD DOCUMENTS

A. Record location of pipe runs, connections, cleanouts and principle invert elevations.

1.6 FIELD MEASUREMENTS

A. Verify that field measurements and elevations are as indicated on the construction Drawings.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. Poly(vinyl chloride) Pipe (Perforated): ASTM D2729; plain end, provide inside diameter as indicated on the Drawings; with required fittings.

2.2 AGGREGATE AND BEDDING

A. As indicated in the Drawings or as approved by the Engineer.

2.3 ACCESSORIES

A. Pipe Coupling: Integral to pipe or solid plastic solvent weld.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with aggregate.

B. Remove large stones or other hard matter which could damage drainage piping or impede consistent backfilling or compaction.

3.3 INSTALLATION

A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.

B. Lay pipe to slope gradients of 1/4 inch per foot or as noted on Drawings with maximum variation from true slope of 1/8 inch in 10 feet.

C. Place pipe with perforations facing down, or as indicated in the Drawings. Mechanically join pipe ends.

3.4 FIELD QUALITY CONTROL

A. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.5 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION 33 46 00

SECTION 33 49 13 - STORM DRAINAGE MANHOLES, FRAMES, AND COVERS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Construct catch basins, grates, frames and brick masonry in conformance with the dimensions and locations shown on the Drawings.

B. Related Work Specified Elsewhere: (Where applicable)

1. Pipe Culverts, Trenching, Excavation, Fill are specified in the appropriate Sections.

1.2 QUALITY ASSURANCE

A. Precast Catch Basin Base, Barrel and Top Sections:

1. Conform to ASTM C478-72 (AASHTO M199-795) except as modified herein, on the Drawings, or as directed by the Engineer.

2. Average strength of 4,000 psi at 28 days

3. Testing:

a. Determine concrete strength by tests on six (6) inch by 12 inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.

b. Have tests conducted at manufacturer's plant or at an approved testing laboratory.

c. Have not less than two (2) tests made for each 100 vertical feet of precast catch basin sections.

B. Frames and Covers:

1. Acceptable Manufacturers:

a. Etheridge Foundry Company

b. Neenah Foundry Company

c. E. L. LeBaron Foundry Company

d. Or equivalent.

C. Masonry:

1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick. (AASHTO M91-78).

2. Cement: ASTM C-150.(AASHTO M85-79I)

3. Hydrated Lime: ASTM C-207.

4. Sand: ASTM C33. (AASHTO M6-65 C197A)).

1.3 SUBMITTALS TO THE ENGINEER

A. Submit shop Drawings and manufacturer's literature in conformance with the General Conditions of the Construction Documents.

B. Bases, Barrel Sections and Tops: Submit test results and receive approval from the Engineer prior to delivery to the site.

PART 2 - PRODUCTS

2.1 PRECAST CATCH BASIN SECTIONS

A. Dimensions, as shown on the Drawings.

B. Use flat tops or eccentric cones as appropriate. Exterior face of cone sections shall not flare out beyond the vertical.

C. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.

D. Constructed to support an HS-20 wheel loading.

E. Openings:

1. Provide openings in the risers to receive pipes entering the catch basin of the types and materials approved by the Engineer.

2. Make openings at the manufacturing plant or cut openings in the field.

3. Size: To provide a uniform annular space between the outside wall of pipe and the riser.

4. Location: To permit setting of the entering pipes at the correct elevations.

F. Joints:

1. Joint gaskets to be flexible self-seating butyl rubber joint sealant installed according to manufacturer's recommendations. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer. Acceptable Materials:

    a. Kent-Seal No. 2

    b. Ram-Nek

    c. Or equivalent.

2. Joints between precast sections shall conform to related standards and manufacturer's instructions.

2.2 FRAMES AND GRATES

A. All essential details of design shall conform to the Drawings. Standard castings differing in non-essential details may be approved by the Engineer.

B. All frames and grates shall be made of cast iron and shall have machined bearing surfaces to prevent rocking under traffic.

C. Grate castings will be smooth with no sharp edges.

D. Constructed to support an HS-20 wheel loading.

2.3 MASONRY

A. Brick:

1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.

2. Immediately remove rejected brick from the work.

B. Mortar:

1. Composition (by volume):

    a. 1 part portland cement.

    b. 1/2 part hydrated lime.

    c. 4-1/2 parts sand.

2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed three (3) times the sum of the volume of cement and lime.

C. Cement:

1. Shall be Type II Portland cement.

D. Hydrated Lime:

1. Shall be Type S.

E. Sand:

1. Shall consist of inert natural sand.

2. Grading:

Sieve	Percent Passing
3/8	100
4	95-100
8	80-100
16	50-85
50	10-30
100	2-10
Fineness Modulus	2.3 - 3.1

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Catch Basin Sections:

1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.

2. Install barrels and tops level and plumb.

3. Make all joints water tight.

4. Solidly fill annular spaces around pipes entering the catch basin with non-shrink grout or other material approved by the Engineer.

5. Cut openings (as required) carefully to prevent damage to barrel sections and tops. Damaged barrel sections and tops shall be replaced by the Contractor at no additional expense to the Owner.

B. Pipe Connections to Catch Basins: Connect pipes to catch basins with joint design and materials approved by the Engineer.

B. Masonry:

1. Laying Brick:

a. Use only clean bricks in brickwork for catch basins.

b. Moisten the brick by suitable means until they are neither too dry to absorb water from the mortar or so wet as to be slippery when laid.

c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.

d. Construct all joints in a neat workmanlike manner; construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.

2. Curing:

a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.

b. Protect brick masonry from the weather and frost as required.

C. Frames and Grates:

1. Set all frames in a full bed of mortar, true to grade and concentric with the catch basin opening.

2. Completely fill all voids beneath the bottom flange to make a watertight fit.

3. Place a ring of mortar at least 1 inch thick around the outside of the bottom flange, extending to the outer edge of the catch basin all around its circumference.

4. Clean the frame seats before setting the covers in place.

E. Bedding and Backfilling:

1. Bedding material of each catch basin shall be six (6) inches of compacted 3/4 inch crushed stone as indicated in the Drawings, or as approved by the Engineer.

2. Backfill all around each catch basin with a minimum 18 inches of granular borrow as indicated in the Drawings.

END OF SECTION 33 49 13

SECTION 01 35 43 - ENVIRONMENTAL PROCEDURES

PART 1 - GENERAL

1.1 DEFINITIONS OF CONTAMINANTS

A. Sediment: Soil and other debris that has been eroded and transported by runoff water.

B. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from construction activity.

C. Chemical Wastes: Includes salts, acids, alkalis, herbicides, pesticides, and organic chemicals.

D. Sanitary Wastes: Wastes characterized as domestic sanitary sewage.

1.2 ENVIRONMENTAL PROTECTION REQUIREMENTS

Contractor is advised that the project is subject to municipal standards and the standards of Maine Department of Environmental Protection Erosion and Sedimentation Control Law permit requirements (MRSA 38 § 420-C). Provide and maintain during the life of the Contract, environmental protection as defined therein. Provide environmental protective measures as required to prevent or control pollution that develops during normal construction practice. Provide environmental protection measures required to correct conditions that develop during the construction of permanent or temporary features associated with the project. Prevent unauthorized placement of fill, any material, or any unauthorized disturbance of any natural resource. Comply with all federal, state, and local regulations pertaining to water, air, and noise pollution.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

No wetland shall be disturbed. Other natural areas shall be preserved in their existing condition or restored to an equivalent or improved condition upon completion of the Work. Confine construction activities to areas defined by the work schedule, Drawings, and Contract Documents.

A. Land Resources: Except in areas indicated to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without special approval of the Owner's

representative. Do not fasten or attach ropes, cables, or guys to any existing nearby trees for anchorages unless specifically authorized. Where such special emergency use is authorized, the Contractor shall be responsible for any resultant damage.

1. Protection: Protect existing trees that are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operators. Remove displaced rocks from uncleared areas. Protect monuments and markers.

2. Repair and Restoration: Repair or restore to their original condition all trees or other landscape features scarred or damaged by the equipment operations. Obtain approval of the repair or restoration from the Engineer prior to its initiation.

3. Temporary Construction: Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and all other vestiges of construction. Temporary roads, parking areas, and similar temporary use areas shall be graded in conformance with surrounding areas and revegetated, seeded, or sodded as required by the plans.

B. Water Resources: Perform all work in such a manner that any adverse environmental impact on water resources is avoided. Storage of hydraulic fluid is not permitted on-site. Quantities of bulk materials shall be reduced to a level acceptable to the Owner's representative.

3.2 EROSION AND SEDIMENT CONTROL MEASURES

A. Burn-off: Burn-off of ground cover is not permitted.

B. Protection of Erodible Soils: All earthwork brought to final grade shall be immediately finished as indicated or specified. Protect immediately side slopes and backslopes upon completion of rough grading. Plan and conduct all earthwork in such a manner as to minimize the duration of exposure of unprotected soils, and in no case shall exposure exceed seven (7) days. Consult weather forecasts prior to exposing large areas of soil. Check erosion control measures before forecasted major storm events.

C. Temporary Protection to Erodible Soils: Utilize the following methods to prevent erosion and control sedimentation.

1. Vegetation and Mulch: Provide temporary protection on all side and back slopes as soon as rough grading is completed or sufficient soil is exposed to require protection to prevent erosion. Such protection shall be by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

3.3 CONTROL AND DISPOSAL OF SOLID, CHEMICAL AND SANITARY WASTES

Pick up solid wastes and place in containers that are emptied on a regular schedule. The preparation, cooking and disposing of food is strictly prohibited on the project site. Conduct handling and disposal of wastes to prevent contamination of the site and other areas. On completion, leave areas clean and natural looking. Remove signs of temporary construction and activities incidental to construction of permanent work in place

A. Disposal of Rubbish, Garbage, and Debris: Dispose of rubbish, garbage and debris in accordance with the requirements specified herein.

B. Sewage, Odor, and Pest Control: Dispose of sewage through chemical toilets or comparable effective units and periodically empty wastes. Include provisions for pest control and elimination of odors.

C. Petroleum Products: Conduct fueling and lubricating of equipment and motor vehicles in a manner that affords the maximum protection against spills and evaporation. Dispose of lubricants to be discarded and excess oil in accordance with approved procedures meeting federal, state and local regulations.

3.4 DUST CONTROL

Keep dust down at all times, including nonworking hours, weekends, and holidays. Sprinkle or treat with dust suppressers, the soil at the site, haul roads, and other areas disturbed by operations. Petroleum products will not be used as suppressers. No dry power brooming is permitted. Instead use vacuuming, wet mopping, wet sweeping, or wet power brooming.

3.5 NOISE

No blasting or use of explosives is permitted without written permission of the owner's representative and then only during designated times.

END OF SECTION 01 35 43

SECTION 01 55 26 - TRAFFIC CONTROL

1.1 DESCRIPTION

A. Work Included:

1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.

2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic.

3. Do not close roads or streets to passage of the public without the permission of the proper authorities.

B. The local police department or road commissioner will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage. If a regulator furnishes an inspector on the job as a result of poor traffic control by the Contractor, the Contractor shall be responsible for all costs assessed by the regulator.

1.2 SCHEDULING WORK

A. Schedule all work so that road closures are minimized. Limit closure to 21 days.

B. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.

C. Do not start work in any new location without the permission of the Engineer.

D. Notify all police and fire departments of all scheduled detours and when streets are reopened, as needed.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

A. Provide adequate warning signs, barricades, signal lights, watchmen and take other necessary precautions for the safety of the public.

B. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.

C. Provide barricades of substantial construction and painted with a finish that increases visibility at night.

D. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.

E. Maintain all necessary signs, barricades, lights, watchmen and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.

F. Traffic control signs for construction work shall be located and of the size and type as outlined in the Manual on Uniform Traffic Control Devices for Streets and Highways as published by the U.S. Department of Transportation.

2.2 UNIFORMED POLICE OFFICER

A. A uniformed police officer is a police officer (local, county or state) on regular or special duty dressed in uniform with the necessary high visibility vest and apparel needed for traffic control.

B. Arrange the police detail with the local Chief of Police, County Sheriff, or State Police Captain depending on jurisdiction.

2.3 FLAG PERSON

A. A flag person is an individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.

B. Flag persons shall be provided by the Contractor.

PART 3 - EXECUTION

3.1 DETOURS

A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.

B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.2 INCONVENIENCE TO RESIDENTS OF VICINITY

A. Whenever a traveled way is closed, perform the Work in such a manner that local travel and residents in the vicinity of the Work will be inconvenienced as little as possible.

B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.

3.3 TRAFFIC CONTROL OFFICERS

A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.

B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

END OF SECTION 01 55 26

SECTION 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Closeout Procedures.

B. Final Cleaning.

1.2 RELATED SECTIONS

A. Section 01 74 13 – Project Cleaning

1.3 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

B. Provide submittals to Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.4 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances.

C. Clean debris from roof.

D. Clean site; sweep paved areas, rake clean landscaped surfaces.

E. Remove waste and surplus materials, rubbish, and construction facilities from the site.

END OF SECTION 01 70 00

SECTION 01 74 13 - PROJECT CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Maintain premises and public properties free from accumulation of waste, debris, and rubbish, caused by activities relating to the Work.

2. At completion of the Work, remove waste materials, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces. Leave project clean and ready for use.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Conduct cleaning and disposal operations in accordance with all applicable local and state laws, ordinances, and code requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Cleaning During Construction:

1. Execute cleaning operations to ensure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.

2. Entirely remove and dispose of material or debris during the progress of the work that has washed into or has been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations.

3. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

4. At reasonable intervals during the progress of work, clean the site and dispose of waste materials, debris, and rubbish.

5. Clean interiors of buildings, when applicable, prior to finish painting, and continue to clean, on an as-needed basis, until buildings or project areas are ready for occupancy.

6. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw material from heights.

7. When applicable, schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly painted surfaces.

B. Control of Hazards:

1. Store volatile wastes in covered metal containers, and remove from premises daily.

2. Prevent accumulation of wastes which may create hazardous conditions.

3. Provide adequate ventilation during use of volatile or noxious substances.

C. Disposal:

1. Do not burn or bury rubbish and waste materials on project site.

2. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.

3. Do not dispose of wastes into streams or waterways.

D. Final Cleaning:

1. Employ experienced workmen, or professional cleaners, for final cleaning.

2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from all sight-exposed interior and exterior finished surfaces.

3. Repair, patch and touch up marred surfaces to specified finishes.

4. Broom clean paved surfaces.

5. Rake clean non-paved surfaces of the project site.

6. Restore to their original condition those portions of the site not designated for alterations by the Contract Documents.

END OF SECTION 01 74 13

SECTION 31 05 13 - SOILS FOR EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Provide, place and compact borrow and bedding material in authorized excavation(s) below normal depth and in other location(s) as shown on the Drawings and/or as specified herein.

B. Related Work Specified Elsewhere:

1. Trench Excavation - Earth, Trench Excavation - Ledge, Trench Backfilling, Compaction, Control and Testing are specified in the appropriate sections in this division.

PART 2 - PRODUCTS

2.1 MATERIALS

All materials shall be applicable as specified in owner's geotechnical report. Utilize materials specified in the geotechnical report in all applicable locations. Materials otherwise not specified in owner's geotechnical report shall conform to the following minimum standards:

A. Gravel Borrow:

1. Well graded granular material having no rocks with a maximum dimension over six (6) inches, except where it is used for pipe bedding in which case the maximum size shall be two (2) inches.

2. Free from frozen material and other unsuitable material.

3. That portion passing a three inch square mesh sieve shall contain no more than 70 percent passing a l/4" mesh sieve and not more than l0 percent passing a number 200 mesh sieve when used as pipe bedding material and not more than five percent passing a number 200 mesh sieve when used as backfill around structures.

B. Screened Stone (Bedding Material):

1. Shall be either screened stone or crushed stone and shall be well graded in size from 1/4" to 3/4".

2. Clean, hard, and durable particles or fragments.

3. Free from dirt, vegetable, or other objectionable matter, and excess of soft, thin elongated, laminated or disintegrated pieces.

4. Sieve Analysis:

Sieve Designation	% Passing by Weight Square Opening
1"	100
3/4"	90-100
3/8"	20-50
No. 4	0-10
No. 8	0-5

C. Sand:

1. Clean, hard and durable particles or fragments.

2. Sieve Analysis:

Sieve Designation	% Passing by Weight Square Opening
3/8"	100
No. 4	95-100
No. 16	50-85
No. 50	10-30
No. 100	2-10

D. Underdrain Backfill Material:

1. Free from organic matter.

2. Gradations:

Type "B" Underdrain:

Sieve Designation	% Passing by Weight Square Mesh Sieves
1"	95-100
1/2"	75-100
No. 4	50-100
No. 20	15-80
No. 50	0-15
No. 100	0-10

Type "C" Underdrain:

Sieve Designation	% by Weight Passing Square Mesh Sieves
1"	100
3/4"	90-100
3/8"	0-75
No. 4	0-25
No. 10	0-5

Filter Fabric Lined Trench: 3"- 6" coarse aggregate.
Filter fabric in accordance with SECTION 31 32 19.23.

3. Shall conform to AASHTO T 27

E. French Drain Stone:

1. Hard, durable rock.

2. Gradations:

Sieve Designation	% by Weight Passing Square Mesh Sieves
6 inch	90-100
1½ inch	0-40
No. 4	0-5

3. Shall conform to AASHTO T 27 except that the total material sampled shall be sieved and the minimum weight of the sample will be 120 lbs.

F. 3/4"- Crushed Stone: Crushed Stone shall be a uniform material, containing angular pieces, as are those which come from a mechanical crusher. Gradation requirements shall be as follows:

Sieve Designation	% by Weight Passing Square Mesh Sieve
1"	98-100
3/4"	0-30
No. 200	0-3

G. Impervious Dam Material: As applicable, impervious dam material shall be uniform natural or selected cohesive soil with minimum of 30 percent of the material passing a No. 200 sieve. It shall not contain vegetation, masses of roots, individual roots larger than 12". long or 1/2". in diameter or other porous or organic matter.

H. Unsuitable Soil Materials: Shall be those defined in AASHTO M145, soil classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7; also, peat and other highly organic soils.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Place bedding material, initial backfill, impervious dam material and fill below pipe bedding in layers of uniform thickness as specified or shown on the Drawings. Maximum lift thickness shall be as specified or shown on the drawings, but not greater than 12".

B. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper. Conform to the requirements of the geotechnical report, but in no case shall compaction be

less than 95 percent of the fill material's maximum dry density determined in accordance with ASTM D1557.

C. In excavations below normal depth or where unsuitable materials are excavated, gravel borrow shall be used unless ground water makes such usage not practical; if such is the case, then screened stone shall be used.

D. No stone two (2) inches in diameter or larger shall be allowed within six (6) inches of the pipe.

E. Where soft silt and clay soils are encountered the trench shall be excavated 6" below the normal bedding and backfilled with six (6) inches of compacted sand.

F. No stone or rock greater than 12" measured at any point shall be placed in the trench backfill.

G. Bed from specified depth below pipe to top of pipe to support pipe and prevent damage. Unless otherwise specified in plan, detail, or applicable section, the following schedule gives the minimum bedding requirements for various types of pipe. Dimensions refer to distance below bottom of pipe.

D.I. Pipe	6" min. gravel borrow.
Concrete pipe	6" min. gravel borrow.
Culverts and Storm Drain Pipe	6" min. gravel borrow.
PVC or ABS Pipe	6" min. screened stone.
P.E. Pipe	6" min. screened stone.

H. Unless otherwise specified in plan, detail, or applicable section, the following schedule gives the minimum initial backfill requirements for various types of pipes.

D.I. Pipe	Gravel borrow; 6" min. over top of pipe.
Concrete Pipe	Gravel borrow; 6" min. over top of pipe.
Culverts and Storm Drain Pipe	Gravel borrow; 6" min. over top of pipe.
PVC or ABS	Screened stone; 6" min. over the top of the pipe.
P.E. Pipe	Screened stone; 6" min. over the top of the pipe.

END OF SECTION 31 05 13

SECTION 31 05 16 – AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building perimeter construction and backfilling, pond embankment construction and site structure backfilling.

B. Fill under slabs-on-grade.

C. Consolidation and compaction.

1.2 RELATED SECTIONS

A. Section 31 23 16 - Excavation.

1.3 REFERENCES

A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 kg) Rammer and 12" (304.8 mm) Drop.

C. ASTM D922 - Test Method for Density of Soil and Soil Aggregate in Place by the Nuclear Methods. (Shallow Depth)

D. ANSI/ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

PART 2 - PRODUCTS

2.1 FILL MATERIAL (as applicable)

A. Common Borrow: MDOT 703.18: (Only for site construction - not for building construction). Place and compact materials in continuous layers not exceeding 8"of compacted depth, compacted to 95 percent of its maximum dry density, in accordance with ASTM D1557 (modified proctor density).

B. Structural Backfill: Furnish in accordance with geotechnical report or specific plan requirements. Gravel Borrow: as specified in the geotechnical report, these plans, or MDOT 703.20: Place at over excavations below slabs and footings. Place over native material after organic soils are removed to raise subgrade below slabs and footings. Utilize per Geotechnical Report, as applicable. As a minimum, construct a 12" layer in a single 12" lift or lifts, and compacted to 95 percent of its maximum dry density, in accordance with ASTM D1557 (modified proctor density). In the case of footings set higher than original grade of competent mineral soil, first compact native material, use structural backfill to establish and

compact fill slopes at 1:1 slopes from the edges of footings (entire backfill areas for retaining walls).

C. Granular Backfill: Per MDOT 703.22 for utility excavations and backfilling operations.

D. Crushed Stone: Per MDOT 703.31 for utility excavations and backfilling operations, except that 100 percent shall pass the 2" sieve.

E. Detention Pond Embankment: Excavated or imported clay silt material, graded, free of lumps larger than 3", rocks larger than 2", and debris. Material shall have at least 20% fines, more than 20% by weight passing the No. 200 sieve, and shall be compacted to a minimum of 95% modified proctor density in 9"-12" maximum lifts. The contractor may utilize glacial marine soil excavated on site with the approval of the owner's representative.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify fill materials to be reused are acceptable.

B. Owner's designated representative shall observe the excavation and accept suitable borrow material for placement as pond embankment material. Sandy layers shall be excluded from use as embankment fill.

C. Verify foundation perimeter drainage installation has been inspected.

3.2 PREPARATION

A. Generally, compact subgrade to density requirements for subsequent backfill materials. The foundation and slab base soil should be placed directly on the existing proof-rolled native mineral soil. Proof rolling should consist of making three passes in a north-south direction followed by three passes in an east-west direction using a large (minimum three ton at drum static weight) vibratory roller in slab areas and narrow roller vibratory trench rollers at footings (all passes in same direction).

B. Cut out soft areas of subgrade not capable of insitu compaction. Fill and compact to density equal to or greater than requirements for subsequent backfill material.

3.3 BACKFILLING

A. Backfill and compact areas to contours and elevations with unfrozen materials.

B. Backfill and compact where footing elevations are higher than suitable native mineral soil with structural backfill below and at 1:1 slope from edge of footing (level for retaining walls). Structural fill should be placed in a maximum of 12" lifts and be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557, Modified Proctor Density

C. Backfill and compact pond embankment areas as early as possible to allow maximum time for settlement before shaping overflow structures.

D. Systematically backfill and compact to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces. Work shall be scheduled so that the pond embankment shall be constructed three months prior to final setting of elevation sensitive components, such as the emergency spillway, allowing maximum time for settlement to occur.

E. Place and compact materials in continuous layers not exceeding 6" compacted depth. Pond Embankment requirements: Pond embankment sections shall be constructed from 8" to 12" lifts. At each lift, a bulldozer or similar equipment shall mechanically break down clods of clay-silt material as each lift is shaped. The owner's representative shall verify that no sand layers remain in each lift. Unsuitable material shall be replaced. Each lift shall be compacted with a sheepsfoot roller to 90 percent modified proctor density. Water shall be added as may be required to reach compaction.

F. Employ a placement method that does not disturb or damage foundation perimeter drainage, foundation damp proofing, and utilities in trenches.

G. Maintain optimum moisture content of backfill materials to attain required compaction density.

H. Make changes gradual. Blend slope into level areas.

I. Remove surplus backfill materials from site.

3.4 FIELD QUALITY CONTROL

A. Compaction testing will be performed in accordance with ANSI/ASTM D1556, ANSI/ASTM D1557, and ANSI/ASTM D698.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.5 PROTECTION OF FINISHED WORK

A. Recompact fills subjected to vehicular traffic. Place and compact additional material of like kind and to equal compaction to re-establish suitable finished or subgrade.

END OF SECTION 31 05 16

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Clearing includes, but is not limited to, removal of trees, brush, stumps, wooded growth, grass, shrubs, poles, posts, signs, fences, culverts and other vegetation and minor structures; the protection of designated wooded growth; the storage and protection of minor structures and materials which are to be replaced; and the disposal of non-salvageable structures and materials, and necessary preliminary grading.

B. Limits of Work:

1. Perform clearing and grubbing work within the areas required for construction, or as shown on the Drawings, to a depth of l2 inches below the existing grade.

2. Perform additional clearing and grubbing work within areas and to depths which, in the opinion of the Engineer, interfere with excavation and/or construction, or are otherwise objectionable.

C. Work Not Included:

1. Clearing and grubbing work performed for the convenience of the Contractor will not be considered for payment.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Dispose of combustible material by burning only when permitted by and in accordance with all applicable local and state laws, ordinances and code requirements.

B. Remove and dispose of non-salvageable structures and material in accordance with all applicable local and state laws, ordinances and code requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide all materials required to complete the work.

B. All timber and wood shall become the property of the Contractor unless other agreements are made between the Owner and the Contractor.

C. Repair any damage to structures to the complete satisfaction of the Owner and Engineer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Carefully preserve and protect from injury all trees and/or shrubs not to be removed.

B. Right-of-way:

1. Where excavation is required on public or private rights-of-way containing trees, shrubs, other growth, or any structure or construction, obtain the Engineer's direction concerning the extent to which such obstacles can be cleared or stripped prior to performing the Work.

2. In all rights-of-way, remove only those particular growths or structures which are, in the opinion of the Engineer, essential for construction operations.

3. All other removals or damage shall be replaced or restored at the Contractor's expense.

3.2 PERFORMANCE

A. Clearing:

1. Remove and dispose of all trees, brush, slash, stubs, bushes, shrubs, plants, debris and obstructions within the area to be cleared, except any areas that may be designated as "Selective Clearing", and except as otherwise shown on the Drawings or as directed by the Engineer.

2. Remove all stumps unless otherwise directed by the Engineer.

3. Dispose of material to be removed daily as it accumulates.

4. Take special care to completely dispose of all elm trees and branches immediately after cutting either by burial in approved locations or, when permitted, by burning in areas well removed from standing elm growth.

B. Protection of Wooded Growth:

1. Fell trees toward the center of the area being cleared to protect trees and shrubs to be left standing.

2. Cut up, remove and dispose of trees unavoidably falling outside the area to be cleared.

3. Employ skilled workmen or tree surgeons to trim and repair all trees that are damaged but are to be left standing and paint all cut surfaces with an approved bituminous paint.

C. Selective Clearing:

1. When shown on the Drawings and when directed by the Engineer, perform selective clearing work to preserve natural tree cover.

2. Perform selective clearing work only under the direction and supervision of the Engineer.

3. Remove all dead and uprooted trees, brush, roots and other material which, in the opinion of the Engineer, are objectionable.

4. Cut flush with the ground and remove only those trees indicated by the Engineer.

5. Employ skilled workmen or tree surgeons to carefully trim all branches requiring cutting on trees to be left standing and to paint all cut surfaces with an approved bituminous paint.

6. Paint tree roots which are cut and are to be left exposed to the weather with an approved bituminous paint.

D. Grubbing:

1. Perform grubbing work beneath new roads, driveways, walks, seeded areas and other areas and as directed by the Engineer.

2. Grub out all sod, vegetation and other objectionable material to a minimum depth of l2 inches below the existing grade.

3. Completely remove all stumps, including major root systems.

E. Disposal:

1. Remove from the site and dispose of material not being burned.

2. Provide an approved disposal area unless otherwise specified.

F. Burning:

1. Dispose of combustible materials by burning only if approved by local and state officials.

2. Employ competent workmen to perform burning work in such a manner and at such locations that adjacent properties, trees and growth to remain, overhead cables, wires and utilities will not be jeopardized.

3. Do not leave fires unguarded.

4. Do not burn poison oak, poison ivy or other plants of similar nature.

5. Do not use tires or other combustible waste material to augment burning.

6. Burn combustible materials daily as the work progresses.

7. The Contractor shall be responsible for all damage caused by burning and shall be responsible for obtaining all necessary permits for burning.

3.3 REPLACEMENT OF MATERIALS

A. Paving, Curbing and Miscellaneous Material:

1. Remove all paving, subpaving, curbing, gutters, brick, paving block, granite curbing, flagging and minor structures that are over the area to be filled or excavated.

2. Remove and replace bituminous asphaltic and portland cement concrete in accordance with the appropriate sections of these Specifications.

3. Properly store and preserve all material to be replaced in a location approved by the Engineer.

B. Shrubs and Bushes:

1. Remove, store, and replace ornamental shrubs and bushes to be preserved in accordance with accepted horticultural practices.

C. Topsoil:

1. When applicable, carefully remove, store, and protect topsoil in accordance with the appropriate section of this division.

D. Responsibility:

1. Replace, at no additional cost to the Owner, materials lost or damaged because of careless removal or neglectful or wasteful storage, disposal or use of these materials.

END OF SECTION 31 10 00

SECTION 31 23 16 - EXCAVATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Perform the following items of work, as shown on the Drawings and specified herein:

1. Excavate and furnish all material necessary to establish suitable finished grades for subgrade preparation, cut slope or embankment construction, as required to complete the work of this Contract, including the furnishing and compaction of additional material as needed.

2. Completely remove from the site all excavated material which is not approved by the Engineer for use as embankment material. This provision does not apply to topsoil which will remain the property of the Owner.

3. Establish subgrades as indicated on the Drawings and specified hereunder.

4. Perform cutting and removal of existing pavements to the extent indicated on the Drawings and as required for the work under this Contract.

5. Protect all trees, shrubs and plantings not designated on the Drawings to be removed, for the duration of the Contract.

6. Protect all utilities on the site for the duration of the work.

B. Related Work Specified Elsewhere:

1. Quality Control

1.2 DEFINITIONS

A. The work involved includes removal, haul and disposal of materials to prepare for construction and the placing and compaction of material to construct embankments.

B. Excavation shall be designated as common, rock, unclassified or muck.

1. Common excavation shall consist of removal of earth, of boulders, solid mortared stone masonry and concrete masonry when each is less than two (2) cubic yards in volume and of rock which can be removed with ordinary excavating machinery. Grubbing shall be considered as common excavation.

2. Rock excavation shall consist of removal of solid rock which cannot be excavated without the use of explosives or ripping equipment and of boulders, solid mortared stone masonry and concrete masonry having a volume of two (2) cubic yards or more.

3. Unclassified excavation shall consist of removal of materials without consideration to their composition.

4. Muck excavation shall consist of excavation of soils and organic materials which are not suitable for use in embankment.

C. Embankment construction shall consist of constructing roadway embankments, including preparation of the areas upon which they are to be placed; site grading around buildings and structures; the construction of parking areas, lawns, berms, and dikes; the placing and compacting of approved material within areas where unsuitable material has been removed; and the placing and compacting of embankment material in holes, pits and other depressions within the roadway area or construction site limits.

D. Related Work Specified Elsewhere (When Applicable):

1. Stripping and Stockpiling of Topsoil; Trench Excavation-Earth; Trench Excavation-Ledge; Borrow and Bedding Material; Trench Backfilling, Compaction, Control and Testing; Temporary Erosion Control and Dewatering are specified elsewhere in this division.

1.3 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. All work shall be performed and completed in accordance with all local, state or federal regulations.

2. The General Contractor shall secure all necessary permits from, and furnish proof of acceptance by, the local and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.

B. Grade and Elevations:

1. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the contract installation.

C. Compaction:

1. The Contractor shall compact all embankment materials in accordance with this specification.

2. Density testing shall be performed by an Independent Testing Laboratory retained by the Owner and acceptable to the Engineer and Contractor.

3. Independent Testing Laboratory shall determine in place densities in accordance with ASTM D1556 or other methods approved by the Engineer.

4. Independent Testing Laboratory shall submit one (1) copy of the following reports to each of the following: Engineer, Resident Project Representative, Contractor;

   a. Test reports on material

   b. Field density test reports

   c. One moisture density curve for each type of soil encountered

5. Location of Tests: (OWNER WILL HANDLE ALL TESTING)

   a. One test per 300 feet of completed roadway subgrade just prior to placement of subbase gravels and additional tests at depths as required by the Engineer.

   b. Two tests on finished subgrade in parking area just prior to placing the subbase gravels and additional tests at depths as required by the Engineer.

6. If the test results fail to meet the requirements of these specifications, the Contractor shall correct the situation and obtain a passing test. The cost of reworking the material to obtain a passing test shall be borne by the Contractor and no allowance will be made for delays in the performance of the work. All testing and retesting shall be conducted by the Independent Testing laboratory. Costs of retesting will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.

1.4 JOB CONDITIONS

A. Disposition of Utilities:

1. The locations of utilities shown on the plans are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities within the project area.

2. Rules and regulations governing the respective utilities shall be observed in executing all work in this section. Active utilities shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable. If, in the progress of excavation, any utility should become damaged and result in any damage to public or private property, the General Contractor shall restore to the original condition, at no additional cost to the Owner, anything which has been damaged or disturbed.

PART 2 – PRODUCTS

2.1 DEFINITIONS OF GRAVEL, SAND, AND SILT CLAY

A. The terms "gravel", "coarse sand," "fine sand" and "silt-clay," as determinable from the minimum test data required in this classification arrangement and as used in subsequent word descriptions, are defined as follows:

1. Gravel - Material passing sieve with 75 mm (3-inch) square openings and retained on the 2.00 mm (No. 10) sieve.

2. Coarse Sand - Material passing the 2.00 mm (No. 10) sieve and retained on the 0.425 mm (No. 40) sieve.

3. Fine Sand - Material passing the 0.425 mm (No. 40) sieve and retained on the 0.075 mm (No. 200) sieve.

4. Silt-Clay (Combined silt and clay) - Material passing the 0.075 mm (No. 200) sieve.

5. Boulders (retained on 77 mm (3-inch) sieve) should be excluded from the portion of the sample to which the classification is applied, but the percentage of such material, if any, in the sample should be recorded.

6. The term "silty" is applied to fine material having plasticity index of ten (10) or less and the term "clayey" is applied to fine material having plasticity index of 11 or greater.

2.2 SOIL MATERIALS

A. Use of Excavated Material:

1. To the extent they are needed, all suitable materials from the specified excavation may be used in the construction of required embankment and slope protective devices (riprap).

2. Surplus excavated materials suitable for filling operations shall be stockpiled for future use as directed by the Owner's. This specific location will be determined at the start of construction.

3. Unsuitable material shall consist of grubbings or other materials which contain rock of size exceeding specifications, organic materials, or other materials of a deleterious nature as deemed by the Engineer. Silts, clays and granular materials with more than 8% passing the number 200 sieve shall be considered unsuitable for embankment in the Frost Penetration Zone under paved areas when sufficient water supply is available to cause heaving.

B. Common borrow shall consist of approved material required for the construction of embankments or for other portions of the work as designated and shall be obtained from a

source off-site, except as otherwise noted. Common borrow shall be free from frozen material, clay, perishable rubbish, peat, organic and other deleterious materials.

C. Gravel borrow shall be free of rocks with a maximum dimension over six inches, frozen material and other unsuitable material. That portion passing a three (3) inch square mesh sieve shall contain no more than 70% passing a ¼-inch mesh sieve and not more than 10% passing a number 200 mesh sieve.

D. Rock fill shall consist of rock for use in embankments which consists of hard durable particles broken to various sizes that will form a compact embankment with a minimum of voids. It shall contain no particles or fragments with a maximum dimension in excess of the compacted thickness of the layer being placed.

E. Embankment material shall consist of suitable approved common excavation and/or common, or gravel borrow. Rock excavation may be used as embankment material if it is thoroughly mixed with common excavation and/or common borrow to eliminate voids.

F. Crushed stone shall consist of clean, angular rock with a blended size range of 3/8" to 1 1/2".

PART 3 - EXECUTION

3.1 SAFETY

A. Comply with applicable local, state or federal safety regulations or in the absence thereof, with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc.

B. Provide shoring, sheeting and/or bracing at excavations as required to prevent cave-ins of excavation, and to assure complete safety of existing structures, utilities and pavements that are to remain in place.

C. Remove sheeting and shoring and bracing, as backfilling operations progress, taking all necessary precautions to prevent failure of excavation sides. Where sheeting is to be left in place, it shall not be within two (2) feet of subgrade.

3.2 COMMON EXCAVATION

A. The Contractor shall excavate material encountered to establish required grade elevations.

1. Unauthorized Excavation:

a. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at the Contractor's expense.

b. The Contractor shall backfill and compact unauthorized excavations as specified for authorized excavations of the same classification, unless otherwise directed by the Engineer.

2. Additional Excavation:

a. When excavation has reached required subgrade elevations, notify the Engineer who will make an inspection of conditions.

b. If unsuitable bearing materials are encountered at the required subgrade elevations, carry excavations deeper and replace the excavated material as directed by the Engineer.

c. Removal of unsuitable material and its replacement as directed will be paid on the basis of contract conditions relative to changes in work.

B. Common excavation areas shall be maintained in such condition that the excavation will be well drained.

C. Roadway excavation, in general, shall proceed in a direction upgrade. Subgrades shall be promptly rolled to prevent absorption of water.

3.3 EXCAVATION FOR UTILITY SERVICES

A. Water, telephone, data, fire alarm, storm drainage, electric services, utility structures, sanitary sewer piping, manholes, and catch basins will be installed under the work of the respective Sections.

3.4 MINIMUM LIMITS FOR EARTH EXCAVATION

A. Earth excavation must be carried to the following limits, unless otherwise indicated herein or on the drawings or authorized by the Engineer

1. Subgrades for site work shall be as follows:

a. Areas to receive topsoil - Four (4) inches below finish grades.

b. Utility structures - Bottom of structure or as shown on the site details and eighteen (18) inches outside wall extremities.

c. On-site bituminous concrete paved surfaces, as noted on the Drawings.

d. Off-site paved areas, as noted on the Drawings.

e. Unspecified site improvements - To bottom elevation of item plus ample working space on all sides.

2. In non-specified areas - To the lines indicated on the Drawings plus proper side clearance for construction.

3.5 ROCK EXCAVATION

A. In open excavations material will be classified as rock only when the following conditions prevail:

1. When the natural compound, natural mixture, and/or chemical element cannot be broken and removed from its existing position and state by a 3/4-yard backhoe or D8 dozer and requires the use of drills, or the use of explosives.

2. Boulders or old concrete foundations in excess of two (2) cubic yards.

3. Anything other is "earth" insofar as removal of the material to be excavated is concerned.

4. NOTE: When during the process of excavation, rock is encountered such material shall be uncovered and exposed, and the Engineer shall be notified by the Contractor, before proceeding further. The areas in question shall then be measured as stipulated in paragraph B, following. The Contractor shall not proceed with excavation of material claimed as rock until the material has been classified by the Engineer. Should the Contractor proceed with the excavation without notifying the Engineer, or prior to the survey, he shall forfeit his right to extra payment in the subject area.

B. The Contractor will provide qualified personnel, acceptable to both the Owner and the Engineer, to take cross-sections of rock before removal of same, and to provide computations of cross-sections and volumes within the pay-line limits.

B. Excavate rock, encountered in grading areas within the contract, to depths as follows:

1. Under pavements and surfaced areas - To six (6) inches below the required subgrade for such areas.

2. Under lawn areas - to two (2) feet below finished grade, unless approved otherwise by the Engineer.

D. Blasting - Obtain written permission and approval of method from the local authorities before proceeding with rock excavation. Explosives shall be stored, handled, and employed in accordance with the provisions of the "Manual of Accident Prevention in Construction: of the Associated General Contractors of America, Inc.

3.6 COLD WEATHER PROTECTION

A. Protect excavations against freezing when atmospheric temperature is less than 35 degrees F.

3.7 COMPACTION

A. General: Control soil compaction during construction to the satisfaction of the Engineer and/or Resident Project Representative by providing compaction to at least the minimum percentage of maximum density as specified for each area classification.

B. Conform to the recommendations of the geotechnical report.

C. Percentage of Maximum Density Requirements: Unless otherwise specified, compact soil to not less than the following percentages of maximum dry density for soils which exhibit a well-defined moisture density relationship (determined in accordance with ASTM D1557) and to not less than the following percentages of relative dry density (determined in accordance with ASTM D2049) for soils which do not exhibit a well- defined moisture density relationship.

1. Lawn or Vegetated Areas: Compact top six (6) inches of subgrade and each layer of backfill or fill material to 90 percent maximum dry density as determined by AASHTO T-180, Method C or D.

2. Pavements: Compact top 12 inches of excavation subgrade and each layer of fill material to 95 percent maximum dry density as determined by AASHTO T-180, Method C or D.

D. Moisture Control: Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material at a rate such that free water does not appear on surface during or subsequent to compaction operations.

E. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

F. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry.

3.8 EMBANKMENT

A. Compaction Equipment

1. Provide sufficient equipment units of suitable types to spread, level and compact fills promptly upon delivery of materials.

2. The Contractor may use any compaction equipment or device which he finds convenient or economical, but the Engineer retains the right to disapprove equipment which, in his opinion, is of inadequate capacity or unsuited to character of material being compacted.

3. The Contractor shall be responsible for the proper placement and compaction of backfill material. Any settlement that occurs shall be repaired by the Contractor at his own cost and expense. If pipeline and/or structures are damaged or displaced, they shall be repaired at the Contractor's expense.

B. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water.

C. Notify the Engineer when excavations are ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Engineer.

D. Place acceptable soil materials in layers to required subgrade elevations, for each area classification listed below.

1. In excavations, use satisfactory excavated or borrow material.

2. Under grassed areas, use satisfactory excavated or borrow material.

3. Under pavements, use satisfactory excavated or borrow material or combination of both.

E. Grub areas a depth of 12-inches where fills are to be less than five (5) feet in depth as shown on the Drawings.

F. When existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

G. Placement and Compaction: Place fill materials in layers no thicker than ten (10) inches.

H. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification.

I. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

J. Place backfill and fill materials evenly to required elevations adjacent to structures. Take care to prevent wedging action of fill against structures by carrying the material uniformly around structure to approximately the same elevation in each lift.

K. When water and sewer piping is laid in filled areas, place the fill before any pipe is placed, and compact as specified to a depth or not more than two (2) feet above the proposed top of the pipe. A trench shall then be excavated to the required grade, and of sufficient width to permit thorough tamping of the fill under the bells and around the pipe.

L. At the end of each day's work the embankment shall be shaped and rolled to minimize infiltration of water.

3.9 GRADING

A. General: Uniformly grade areas within limits of construction. Smooth finished surface within specified tolerances.

1. Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10 feet above or below the required subgrade elevations.

2. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than ½-inch above or below the required subgrade elevation.

3.10 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances in settled, eroded or rutted areas.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, reshape, and compact to required density prior to further construction.

3.11 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Removal from Owner's Property: Remove waste materials, including unacceptable excavated material, trash and debris, and dispose of it off the Owner's property. This provision does not apply to stockpiled topsoil which shall remain on site unless written authorization for its removal is provided by the Engineer.

END OF SECTION 31 23 16

SECTION 31 23 16.13 - TRENCHING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Trench excavation work in earth includes the removal of sand, gravel, existing sewers and manholes, ashes, loam, organics, clay, soft or disintegrated rock or hard pan existing sewers and manholes which can be removed with a backhoe, or a combination of such materials, and boulders measuring less than one (1) cubic yard for the installation of pipes, utilities and appurtenant structures.

2. All trench excavation shall be classed as earth or ledge.

B. Related Work - Specified Elsewhere:

1. Traffic regulation and pedestrian protection is specified in the appropriate division.

2. Clearing, removal and replacement of paving, trench excavation ledge, borrow and bedding, material, manholes, and catch basins, trench backfilling, compaction, control and testing, when applicable, are specified in the appropriate sections in this division.

3. Pipe and pipe fittings, valves, gates, and hydrants, when applicable, are specified the applicable sections.

1.2 JOB CONDITIONS

A. Utilities:

I. The locations of utilities shown on the plans are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities within the project area.

2. Rules and regulations governing the respective utilities shall be observed in executing all work in this section. Active utilities shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization from the Utility Company. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable. If, in the progress of excavation, any utility should become damaged and result in any damage to public or private property, the General Contractor

shall restore to the original condition, at no additional cost to the Owner, anything which has been damaged or disturbed.

B. Existing Structures:

1. Perform excavation in such a manner that will prevent any possibility of undermining and disturbing the foundations of any existing structures and any work previously completed under this Contract.

2. Where existing buildings and other structures are in proximity to the proposed construction, exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures, that may be required.

C. Repairing Damage:

1. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility company, the property owners and the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The Contractor shall not have any right of property in any suitable materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling.

C. Unsuitable Material:

1. If, in the opinion of the Engineer, the material encountered above the indicated grade, shown on the Drawings, for excavation is unsuitable material, remove the material to the widths and depths as directed by the Engineer. Replace this material as specified in the "Trench Backfilling, Compaction, Control and Testing" section of this division.

2. If, in the opinion of the Engineer, the material encountered at or below the grade shown on the Drawings for excavation is unstable material, remove the material to the full width of the trench and to a minimum depth of twelve inches below the pipe. Replace this material with thoroughly compacted suitably screened gravel bedding material.

3. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations acceptable to or designated by the Owner, at no additional cost to the Owner.

C. Embankment Material:

1. Obtain prior approval and instructions from the Engineer prior to undertaking the excavation for pipe placement of any fill material that has been in an embankment less than one year.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. General:

1. Unless otherwise specifically directed or permitted by the Engineer, begin excavation at the low end of sewer and storm lines and proceed upgrade.

2. Perform excavation for force mains and water mains in a logical sequence.

B. Amount of Excavation:

1. Trench width: As shown on the Drawings.

2. Trench depth: As shown on the Drawings.

3. Open Excavation:

a. The extent of open excavation shall be controlled by prevailing conditions.

b. Open excavation shall, at all times, be confined to the limits prescribed by the Engineer.

c. No trenches shall be left open during non-working hours unless adequate provisions are made to prevent injury to the work or persons. Appropriate barricades and warning devices shall be used to alert the public of hazardous areas.

4. Unauthorized Excavation:

a. Backfill to the specified grade, any excavation beyond the limits stated above and as shown on the Drawings (unless specifically ordered by the Engineer) with thoroughly compacted gravel borrow or screened gravel.

b. Backfilling unauthorized excavation shall be at no additional cost to the Owner.

C. Shoring and Bracing:

1. As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards.

END OF SECTION 31 23 16.13

SECTION 31 25 13 - EROSION CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The work under this section shall include provision of all labor, equipment, materials and maintenance of temporary erosion control devices as specified herein, as shown on the Drawings and as directed by the Engineer.

2. Erosion control measures shall be provided as necessary to correct conditions that develop prior to the completion of permanent erosion control devices or as required to control erosion that occurs during normal construction operations.

3. Construction operations shall comply with all federal, state and local regulations pertaining to erosion control.

4. After award of the Contract, prior to commencement of construction activities, meet with the Engineer to discuss erosion control requirements and develop a mutual understanding relative to details of erosion control.

B. Related Work Specified Elsewhere:

1. Site work is specified in appropriate sections of this Division.

2. Provisions stipulated in Environmental Protection.

C. Design Criteria:

1. Conduct all construction in a manner and sequence that causes the least practical disturbance of the physical environment. Protect existing vegetation designated to remain.

2. Stabilize disturbed earth surfaces in the shortest time and employ such temporary erosion control devices as may be necessary until such time as adequate soil stabilization has been achieved.

1.2 SUBMITTALS

A. The Contractor shall furnish the Engineer, in writing, his work plan giving proposed locations for storage of topsoil and excavated material before beginning construction. A schedule of work shall accompany the work plan. Acceptance of this plan will not relieve the Contractor of the responsibility of completion of the work as specified.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Baled Hay:

1. At least 14" by 18" by 30" securely tied to form a firm bale, staked as necessary.

B. Sand Bags:

1. Heavy cloth bags of approximately one cubic foot capacity filled with sand or gravel.

C. Mulches:

1. Loose hay, straw, peat moss, wood chips, bark mulch, crushed stone, wood excelsior, or wood fiber cellulose. Provide specified item by type and use as and where specified.

2. Type and use shall be as specified by the "Maine Erosion and Sedimentation Control Handbook for Construction - Best Management Practices" prepared by the Maine DEP and the Soil and Water Conservation Commission herein after referred to as the BMP.

D. Mats and Nettings:

1. Twisted Craft paper, yarn, jute, excelsior wood fiber mats, glass fiber and plastic film.

2. Type and use shall be as specified on the plan and consistent with the BMP manual.

E. Permanent Seed:

1. Conservation mix appropriate to the predominant soil conditions as specified in the BMP and subject to approval by the Engineer.

F. Temporary Seeding:

1. Use species appropriate for soil conditions and season as specified in the BMP and subject to approval by the Engineer.

G. Water:

1. The Contractor shall provide water and equipment to control dust, as directed by the Engineer.

H. Filter Fabrics:

1. Filter fabric shall be of one of the commercially available brands such as Mirafi, Typar or equivalent. Fabric types for particular applications shall be approved by the Engineer prior to installation.

I. Silt Fence:

1. Consistent with BMPs.

J. Bark Mulch Berm:

1. Consistent with BMPs.

K. Stone Check Dam:

1. Consistent with BMPs.

2.2 CONSTRUCTION REQUIREMENTS

A. Temporary Erosion Checks:

1. Temporary erosion checks shall be constructed in ditches and other locations as necessary. Stones shall be used for check dams as specified.

2. Baled hay or sediment barrier may be used to fit local conditions.

B. Temporary Berms:

1. Temporary barriers shall be constructed along the toe of embankments when necessary to prevent erosion and sedimentation.

C. Temporary Seeding:

1. Areas to remain exposed for a time exceeding 15 days shall receive temporary seeding per the current Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers or as depicted on the plans in the absence of Maine DEP standards.

D. Construct silt fence in accordance with details provided prior to soil disturbance.

E. Mulch All Areas Receiving Seeding: Use either wood cellulose fiber mulch (750 lbs/acre); or straw mulch with chemical tack (as per manufacturers' specifications). Wetting for small areas may be permitted. Biodegradable netting is recommended in areas to be exposed to drainage flow.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Temporary Erosion Checks:

1. Temporary erosion checks shall be constructed in ditches and at other locations designated by the Engineer. The Engineer may modify the Contractor's arrangement of silt fences, bales and bags to fit local conditions.

2. Baled hay, silt fences, or sandbags, or some combination, may be used in other areas as necessary to inhibit soil erosion.

3. Siltation fence, if called for in the plans, shall be located and installed as shown.

4. Sedimentation ponds shall be sited and constructed to the grades and dimensions as shown on the Drawings and will include drainage pipe and an emergency spillway.

B. Maintenance: Erosion control features shall be installed prior to excavation wherever appropriate. Temporary erosion control features shall remain in place and shall be maintained until a satisfactory growth of grass is established. The Contractor shall be responsible for maintaining erosion control features throughout the life of the construction contract. Maintenance will include periodic inspections by the Owner or Engineer for effectiveness of location, installation and condition with corrective action taken by the Contractor as appropriate.

D. Removing and Disposing of Materials:

1. When no longer needed, material and devices for temporary erosion control shall be removed and disposed of as approved by the Engineer.

2. When removed, such devices may be reused in other locations provided they are in good condition and suitable to perform the erosion control for which they are intended.

END OF SECTION 31 25 13

SECTION 31 32 19.23 - GEOTEXTILE LAYER SEPARATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Furnish all materials and install filter fabric of the types, dimensions and in the location(s) shown on the Drawings and specified herein.

B. Related Work Specified Elsewhere:

1. Temporary Erosion Control, Riprap and Stone Ditch Protection, and Gabions and Revet Mattresses are specified in the appropriate sections of this Division.

1.2 QUALITY ASSURANCE

A. A competent laboratory must be maintained by the manufacturer of the fabric at the point of manufacture to ensure quality control.

B. During all periods of shipment and storage, the fabric shall be wrapped in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, temperatures greater than 140°F, mud, dirt, dust and debris.

1.3 SUBMITTALS

A. Manufacturer shall furnish certified test reports with each shipment of material attesting that the fabric meets the requirements of this Specification.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Filter fabric for use in stabilization, drainage, underdrains, erosion control, landscaping and beneath structures shall be formed in widths of not less than six (6) feet and shall be as specified on the plans. In the absence of a plan call out, fabric shall meet the requirements of Table 1. Both woven and non-woven geotextiles are acceptable; however no "slit-tape" woven fabrics will be permitted for drainage, underdrain, and erosion control applications.

Table 1 - Geotextile Minimum

Mechanical Property	Test Method	Permissible Value
Grab Tensile Strength (both directions)	ASTM D4632	120 pounds
Grab Elongation	ASTM D4632-86	50 percent
CBR Puncture Strength	ASTM D6241	310 pounds
Trapezoid Tear Strength	ASTM D4533-85	60 pounds
Water Flow Rate	ASTM D4491-85	135 gal/min/sf
Equivalent Opening Size	ASTM D4751	80 (EOS)
Coefficient of Permeability	ASTM D4491-85	0.2 cm/sec
UV Resistance	ASTM D4355	70% Strength Retained

The geotextile shall have property values expressed in "typical" values that meet or exceed the values stated above as determined by the most recent test methods specified above.

B. Filter fabric for use in reinforcement and under riprap shall be as specified on the plans. In the absence of a plan callout, fabric shall meet the requirements of Table 2. Woven and non-woven geotextiles are acceptable.

Table 2 - Geotextile Minimum

Mechanical Property	Test Method	Permissible Value
Grab Tensile Strength (both directions)	ASTM D4632	200 pounds
Grab Elongation	ASTM D4632-86	15 percent
CBR Puncture Strength	ASTM D3787	700 pounds
Trapezoid Tear Strength	ASTM D6431	75 pounds
UV Resistance	ASTM D4355	70% Strength Retained
Equivalent Opening Size	ASTM D4751	between #20 and #100 (EOS) U.S. Std. Sieve number(s)

The geotextile shall meet or exceed the "typical" values stated above as determined by the most recent test methods specified above.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install geotextile as shown on the drawings or as directed in appropriate specifications in this division or in accordance with manufacturer's instructions or as directed by the Engineer.

END OF SECTION 31 32 19.23

SECTION 32 11 23 - AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The aggregate base and subbase courses for use below pavement shall be composed of layers of aggregate of different gradations.

B. Related Work Specified Elsewhere (When Applicable):

1. Excavation and Embankment, Bituminous Concrete Paving.

1.2 SUBMITTALS

A. Contractor shall certify that materials comply with the specification requirements by submitting either laboratory test results or certificates of compliance.

1.3 QUALITY ASSURANCE

A. Compact aggregate base and subbase course materials to a density of at least 95 percent of the maximum density as determined in accordance with ASTM D-1557, Method D.

B. Work shall be halted when the Engineer or Resident Project Representative is not satisfied with the apparent results of the Contractor's compaction operation. A testing laboratory acceptable to the Engineer shall then be obtained by the Owner to determine, by conducting density tests, if the Contractor is complying with these compaction specifications.

1. If the test results fail to meet the requirements of these Specifications, the Contractor shall undertake whatever action is necessary, to obtain the required compaction. The cost of the testing service will be borne by the Contractor and no allowance will be considered for delays in the performance of the work.

2. If the test results pass and meet the requirements of these Specifications, the direct invoice cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aggregate subbase course shall be gravel consisting of hard, durable particles which are free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the portion which will pass a three (3) inch sieve shall meet the grading requirements of the following tables:

Table 1 - Gradation Requirements - Aggregate Subbase Course:

Sieve Designation	Furnish only when specified Percent by Weight Passing Square Mesh Sieve Type D
½"	35-80
¼"	25-65
No. 40	0-30
No. 200	0-7.0

B. Aggregate for base shall be screened or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a three (3) inch sieve shall meet the grading requirements of the following table:

Table 2 - Gradation Requirement - Aggregate Base Course

Sieve Designation	Percent by Weight Passing Square Mesh Sieves Type A (Crushed) Aggregate	Type B (Screened) Aggregate
1/2"	45-70	35-75
1/4"	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

C. Gradation tests shall conform to AASHTO Method T-27, except that the material may be separated on the 1/2" sieve. The subbase shall not contain particles of rock which will not pass the six (6) inch square mesh sieve. Type A aggregate for base shall not contain particles of rock which will not pass the two (2) inch square mesh. Type B aggregate for base shall not contain particles of rock which will not pass the four (4) inch sieve. Type C aggregate for base shall not contain particles of rock which will not pass the six (6) square mesh sieve.

PART 3 - EXECUTION

3.1 PLACING

A. The subbase course may be constructed full depth in two (2) lifts provided compaction is achieved. Fine grading the lower layer will not be required.

B. Aggregate base course shall be placed full depth in one (1) lift.

3.2 SHAPING AND COMPACTING

A. All layers of aggregate subbase course shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed.

B. The Contractor shall bear full responsibility for and make all necessary repairs to the base and subbase courses and the subgrade until the full depth of the base and subbase courses is placed and compacted. Repairs shall be considered incidental to other contract items and shall be made at no cost to the Owner.

C. If the top of any layer of the aggregate base or subbase course becomes contaminated by degradation of the aggregate or addition of foreign materials, the contaminated material shall be removed and replaced with the specified material at the Contractor's expense.

D. The top of any aggregate subbase course layer shall be scarified and loosened for a minimum depth of one (1) inch immediately prior to the placing of the next layer of aggregate base course. This scarifying shall be considered incidental to placing the course, and no separate payment will be made.

3.3 SURFACE TOLERANCE

A. The completed surface of the aggregate base and subbase courses shall be shaped and maintained to a tolerance, above or below the required cross sectional shape, of 3/8" for aggregate base course and 1/2" for aggregate subbase.

END OF SECTION 32 11 23

SECTION 32 12 16 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Asphaltic concrete paving and surface sealer; wearing binder or base course.

1.2 RELATED SECTIONS

A. Section 32 11 23 - Aggregate Base and Subbase.

B. Section 31 23 16 – Excavation and Trenching.

1.3 REFERENCES

A. MS-2 - Asphalt Mix Design Methods; The Asphalt Institute (AI).

B. MS-3 - Asphalt Plant Manual - The Asphalt Institute (AI).

C. MS-8 - Asphalt Paving Manual - The Asphalt Institute (AI).

D. MS-19 - Basic Asphalt Emulsion Manual, The Asphalt Institute (AI).

E. Maine Department of Transportation (MaineDOT) Standard Specifications (November 2014, Edition)

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with AI Manual MS-8.

B. Mixing Plant: Conform to AI Manual MS-3.

C. Obtain materials from same source throughout.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when base surface temperature is less than 40°F, or surface is wet or frozen.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Aggregate for Binder Course Mix: MaineDOT 19 mm, unless otherwise noted.

B. Aggregate for Wearing Course Mix: MaineDOT 12.5 mm, unless otherwise noted.

C. Fine Aggregate: In accordance with MaineDOT standards.

2.2 ACCESSORIES

A. Tack Coat (if required): Homogeneous, medium curing, liquid asphalt. In accordance with MaineDOT standards.

2.3 ASPHALT PAVING MIX

A. Binder Course: in accordance to MaineDOT standard specifications.

B. Wearing Course: in accordance to MaineDOT standard specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that compacted aggregate base course is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.2 BASE

A. Section 32 11 23 - Aggregate Base Course forms the base construction for work of this Section.

3.3 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. Place binder course to specified compacted thickness.

B. Place wearing course to specified compacted thickness.

C. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

D. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.4 TOLERANCES

A. Flatness: Maximum variation of 1/8" measured with 10' straight edge.

B. Scheduled Compacted Thickness: Within 1/4".

C. Variation from True Elevation: Within 1/8".

3.5 PROTECTION

A. Prevent machinery from contracting finished pavement.

END OF SECTION 32 12 16

SECTION 32 17 23 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. This work shall consist of providing final reflective pavement lines and markings after paving (paint).

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pavement Marking Paint:

1. Ready-mixed white and yellow traffic paint shall conform to the requirements of AASHTO M248-74, Type N or F.

PART 3 - EXECUTION

3.1 GENERAL:

A. The Contractor shall apply all pavement markings in accordance with the latest edition of the Manual on Uniform Traffic Control Devices and within temperature and ambient conditions approved by the manufacturer.

B. Lines shall be provided as shown on the plans or directed by the Engineer.

3.3 PREPARATION OF SURFACE FOR PAVEMENT MARKING PAINT

A. The Contractor shall, immediately before applying pavement marking paint, ensure that the existing surface is dry and free from dirt, grease, oil or other foreign matter.

3.4 APPLICATION OF PAVEMENT MARKING PAINT

A. Paint shall be applied with a minimum wet thickness of 15 mm.

END OF SECTION 32 17 23

SECTION 32 90 00 – LANDSCAPE FINISHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections, apply to Work of this section.

1.2 SECTION INCLUDES

A. Restoration of disturbed areas with new or preserved plant material to replace removed, damaged, and dead plant material from within the work area. Work includes inventory and assessment of trees, shrubs, and flowering plants to be preserved or replaced, preparation of soil, placement of plant life, seed, sod, and fertilizer, mulching, watering, maintenance and warranty work.

1.3 QUALITY CONTROL

A. Nursery: Company specializing in growing and cultivating the plant life specified in this Section.

B. Sod Producer: Company specializing in sod production & harvesting; certified by the State of Maine.

C. Plant Materials: Comply with recommendations of ANSI Z60.1.

D. Maintenance Services: Performed by installer.

1.4 WARRANTY

A. Provide one year warranty, including one continuous growing season, under provisions of Section 01 00 00 including coverage of plants from death or unhealthy conditions.

B. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty beginning on date of replacement.

1.5 MAINTENANCE SERVICE

A. Maintain seeded areas or sodded areas and plant life immediately after placement until grass and plants are well established and exhibit a vigorous growing condition for two cuttings.

PART 2 - PRODUCTS

2.1 GRASS

A. Seed Mixture: As enumerated

B. Sod: ASPA Certified Nursery grown; cultivated grass sod; with strong fibrous root system.

C. Machine cut sod with minimum 1/2" and maximum 1" topsoil base.

2.2 TREES, PLANTS, AND GROUND COVER

A. Trees Plants and Ground Cover: Species and size as indicated by observing and collecting inventory of existing plants within work area, and replacement sizes as recommended by horticultural vendor, grown in climatic conditions similar to those in locality of the Work.

B. Provide balled and burlapped trees and shrubs.

2.3 SOIL AND SOIL MODIFICATION MATERIALS

A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, free of subsoil, clay or impurities, plants, weeds and roots.

B. Fertilizer: Fifty percent of the elements derived from organic sources, to the following proportions: Nitrogen 5 percent, phosphoric acid 10 percent, soluble potash 5 percent.

2.4 FINISH MATERIALS

A. Wood Pegs: Softwood, sufficient size and length to ensure anchorage of sod on slope.

B. Mesh: Interwoven biodegradable fiber.

C. Edging: Decay resistant wood, treated softwood or redwood.

D. Drip Strip Stone: Washed natural stone, 3/4" to 1-1/2" size.

E. Mulch: Dark Pine Brown native bark

F. Weed Barrier: 4 oz, woven, needle punched polypropylene fabric.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that required underground utilities are in proper location.

B. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas. Remove stones over 1-1/2" in any dimension. Remove sticks, roots, rubbish and other extraneous matter.

C. Scarify subsoil to a depth of 3".

3.2 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 4 inches compacted thickness. Rake smooth.

B. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

C. Place topsoil into pits and beds intended for plant root balls to a minimum thickness of 6".

D. Apply fertilizer in accordance with manufacturer's instructions.

3.3 SEEDING

A. Apply seed or Hydroseed with a seed slurry at a rate of 4 lb/1000ft^2 evenly in two intersecting directions.

B. Immediately following seeding, apply agricultural mulch to a loose thickness of 1-1/2".

C. Apply water with a fine spray immediately after each area has been mulched.

3.4 MULCHING

A. Place mulch over weed barrier to uniform thickness (3" minimum).

C. On slopes 1:2 and steeper, place mesh over finished surface.

3.5 PLANTING

A. Set plants in pits or beds partly filled with prepared topsoil mixture. Backfill with topsoil mixture.

B. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

C. Stake and guy trees immediately after planting.

D. Mulch trees and shrubs with 3" minimum thickness of bark mulch.

E. Apply anti-desiccant agent to plantings.

F. Prune trees and shrubs in accordance with horticultural practice.

3.6 MAINTENANCE

A. Mow grass at regular intervals to maintain maximum height of 2-1/2". Do not cut more than 1/3 of grass blade at any one mowing.

B. Water to prevent grass and soil from drying out.

C. Control growth of weeds. Apply treatments in accordance with manufacturer's instructions and Owner's policies.

END OF SECTION 32 90 00

SECTION 32 92 19 - SEEDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish, place, and test topsoil, seed, lime, and fertilizer where shown on the drawings and protect and maintain seeded areas disturbed by construction work, as directed by the Engineer.

B. Related Work Specified Elsewhere (When Applicable): Earthwork, excavation, backfill, compaction, site grading and temporary erosion control are specified in the appropriate Sections of this Division.

1.2 SUBMITTALS AND TESTING

A. Seed:

1. Furnish the Engineer with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered to the project site is fully labeled in accordance with the Federal Seed Act and is at least equal to the specification requirements.

2. This certification shall appear in, or with, all copies of invoices for the seed.

3. The certification shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates and certificates have been approved.

4. Each lot of seed shall be subject to sampling and testing, at the discretion of the Engineer, in accordance with the latest rules and regulations under the Federal Seed Act.

B. Topsoil:

1. Inform the Engineer, within 30 days after the award of the Contract, of the sources from which the topsoil is to be furnished.

2. Obtain representative soil samples, taken from several locations in the area under consideration for topsoil removal, to the full stripping depth.

3. Have soil samples tested by an independent soil testing laboratory, approved by the Engineer, and directed by owner at owners expense.

4. Have soil samples tested for physical properties and pH (or lime requirement), for organic matter, available phosphoric acid, and available potash, in accordance with standard practices of soil testing.

5. Approval, by the Engineer, to use topsoil for the work will be dependent upon the results of the soils tests.

C. Lime & Fertilizer:

1. Furnish the Engineer with duplicate copies of invoices for all lime and fertilizer used on the project showing the total minimum carbonates and minimum percentages of the material furnished that pass the 90 and 20 mesh sieves and the grade furnished.

2. Each lot of lime and fertilizer shall be subject to sampling and testing at the discretion of the Engineer.

3. Sampling and testing shall be in accordance with the official methods of the Association of Official Agricultural Chemists.

4. Upon completion of the project, a final check may be made comparing the total quantities of fertilizer and lime used to the total area seeded. If the minimum rates of application have not been met, the Engineer may require the Contractor to distribute additional quantities of these materials to meet the minimum rates.

1.3 DELIVERY, STORAGE & HANDLING

A. Seed:

1. Furnish all seed in sealed standard containers, unless exception is granted in writing by the Engineer.

2. Containers shall be labeled in accordance with the United States Department of Agriculture's rules and regulations under the Federal Seed Act in effect at the time of purchase.

B. Fertilizer:

1. Furnish all fertilizer in unopened original containers.

2. Containers shall be labeled with the manufacturer's statement of analysis.

1.4 JOB CONDITIONS

A. Topsoil: Do not place or spread topsoil when the subgrade is frozen, excessively wet or dry, or in any condition otherwise detrimental, in the opinion of the Engineer, to the proposed planting or to proper grading. Do not use excessively wet topsoil.

B. Seeding:

1. Planting Seasons: The recommended seeding time is from April 1 to September 15. The Contractor may seed at other times. Regardless of the time of seeding, the Contractor shall be responsible for each seeded area until it is accepted.

2. Weather Conditions:

   a. Do not perform seeding work when weather conditions are such that beneficial results are not likely to be obtained, such as drought, excessive moisture, or high winds.

   b. Stop the seeding work when, in the opinion of the Engineer, weather conditions are not favorable.

   c. Resume the work only when, in the opinion of the Engineer, conditions become favorable, or when approved alternate or corrective measures and procedures are placed into effect.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Seed:

1. Provide the grass or plant material seed mixture specified on the drawings. When unspecified, provide a mix approved by the Engineer, having the following composition:

   a. Roadside Mixture:
      50 percent Creeping Red Fescue
      15 percent Kentucky Bluegrass
      5 percent White Clover
      2 percent Red Top
      3 percent Birdsfoot Trefoil
      25 percent Annual Ryegrass

   b. Alternate Mixture:
      50 percent Creeping Red Fesque
      30 percent Kentucky Bluegrass
      20 percent Annual Ryegrass

2. Do not use seed which has become wet, moldy, or otherwise damaged in transit or during storage.

B. Topsoil:

1. Provide the quantity of topsoil necessary, in the opinion of the Engineer, to complete the work.

2. Provide topsoil that is natural, friable clay-loam soil possessing the characteristics of representative soils in the vicinity which produce heavy growths of crops, grass, or other vegetation.

2. Provide topsoil which is reasonably free from subsoil, brush, objectionable weeds, other litter, clay lumps, stones, stumps, roots, objects larger than 2" in diameter, and toxic substances which might be harmful to plant growth or be a hindrance to grading, planting, and maintenance operations.

4. Obtain topsoil from naturally well drained areas.

C. Lime:

1. Provide lime which is ground limestone containing not less than 85% of total carbonate and of such fineness that 90% will pass a No. 20 sieve and 50% will pass a No. l00 sieve.

2. Coarser materials will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing a No. l00 sieve. No additional payment will be made to the Contractor for the increased quantity.

D. Fertilizer:

1. Provide a commercial fertilizer approved by the Engineer.

2. Provide fertilizer containing the following minimum percentage of nutrients by weight:
10 % Available phosphoric acid
10 % Available potash
10 % Available nitrogen (75% of the nitrogen shall be organic)

PART 3 - EXECUTION

3.1 PREPARATION

A. Equipment:

1. Provide all equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials.

2. Demonstrate to the Engineer that the equipment will apply materials at the specified rates.

B. Soil: Perform the following work prior to the application of lime, fertilizer or seed.

1. Scarify the subgrade to a depth of 2" to allow the bonding of the topsoil with the subsoil.

2. Apply topsoil to a depth of 4" or as directed on areas to be seeded.

3. Trim and rake the topsoil to true grades free from unsightly variations, humps, ridges or depressions.

4. Remove all objectionable material and form a finely pulverized seed bed.

3.2 PERFORMANCE

A. Grading:

1. Grade the areas to be seeded as shown on the Drawings or as directed by the Engineer.

2. Leave all surfaces in even and properly compacted condition.

3. Maintain grades on the areas to be seeded in true and even conditions, including any necessary repairs to previously graded areas.

B. Placing Topsoil:

1. Uniformly distribute and evenly spread topsoil on the designated areas.

2. Spread the topsoil in such a manner that planting work can be performed with little additional soil preparation or tillage.

3. Correct any irregularities in the surface resulting from topsoiling or other operations to prevent the formation of depressions where water may stand.

4. Thoroughly till the topsoil to a depth of at least 3" by plowing, discing, harrowing, or other approved method until the condition of the soil is acceptable to the Engineer.

C. Placing Fertilizer:

1. Distribute fertilizer uniformly at a rate determined by the soils test over the areas to be seeded.

2. Incorporate fertilizer into the soil to a depth of at least 3" by discing, harrowing, or other methods acceptable to the Engineer.

3. The incorporation of fertilizer may be a part of the tillage operation specified above.

4. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will be acceptable.

D. Placing Lime:

1. Uniformly distribute lime immediately following or simultaneously with the incorporation of fertilizer.

2. Distribute lime at a rate determined from the pH test, to a depth of at least 3" by discing, harrowing, or other methods acceptable to the Engineer.

E. Seeding:

1. Level out any undulations or irregularities in the surface resulting from tillage, fertilizing, liming or other operations before starting seeding operations.

2. Hydroseeding:

a. Hydroseeding may be performed where approved and with equipment approved by the Engineer.

b. Sow the seed over designated areas at a minimum rate of 5 lbs per 1000 ft^2.

c. Seed and fertilizing materials shall be kept thoroughly agitated in order to maintain a uniform suspension within the tank of the hydroseeder.

d. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates.

3. Drill Seeding:

a. Drill seeding may be performed with approved equipment having drills not more than 2" apart.

b. Sow the seed uniformly over the designated areas to a depth of l/2" and at a rate of 5 lbs per l,000 ft^2.

4. Broadcast Seeding:

a. Broadcast seeding may be performed by equipment approved by the Engineer.

b. Sow the seed uniformly over the designated areas at a rate of 5 pounds per l,000 square feet.

c. Sow half the seed with the equipment moving in one direction and the remainder of the seed with the equipment moving at right angles to the first sowing.

d. Cover the seed to an average depth of l/2" by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved devices.

e. Do not perform broadcast seeding work during windy weather.

F. Compacting:

1. Seeded areas must be raked lightly after sowing unless seeding is to be directly followed by application of an approved mulch.

2. Compact the entire area immediately after the seeding operations have been completed.

3. Compact by means of a cultipacker, roller, or other equipment approved by the Engineer weighing 60 to 90 lbs per linear foot of roller.

4. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, use a pneumatic roller (not wobbly wheel) that has tires of sufficient size to obtain complete coverage of the soil.

5. When using a cultipacker or similar equipment, perform the final rolling at right angles to the prevailing slopes to prevent water erosion, or at right angles to the prevailing wind to prevent dust.

3.3 PROTECTION & MAINTENANCE

A. Protection:

1. Protect the seeded area against traffic or other use.

2. Erect barricades and place warning signs as needed.

B. Maintenance:

1. Properly care for the seeded areas during the period when the grass is becoming established.

2. The protection period shall extend for l2 months after the completion of the entire project, unless the desired cover, in the opinion of the Engineer, is established in a shorter period of time.

3.4 ACCEPTANCE

A. At final acceptance of the project all areas shall have a close stand of grass with no weeds present and no bare spots greater than three inches (3") in diameter over greater than five percent (5%) of the overall seeded area.

END OF SECTION 32 92 19

SECTION 33 05 13 - MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Construct precast manholes, covers, frames, brick masonry, precast of field constructed inverts and apply waterproofing in conformance with the dimensions, elevations, and locations shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere (when applicable):

1. Final sewer testing is specified in this Division.

2. Pipe, excavation, backfill, paving and dewatering are specified in the appropriate Sections in this Division. Concrete and grout shall comply with the provisions of this section and as modified per the Engineer.

1.2 QUALITY ASSURANCE

A. Precast Manhole Base, Barrel and Top Sections:

1. Conform to ASTM C478-97 except as modified herein, and on the Drawings.

2. Average strength of 4,000 psi at 28 days.

3. Testing:

a. Determine concrete strength by tests on six (6) inch by 12-inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.

b. Have tests conducted at the manufacturer's plant or at a testing laboratory approved by the Engineer.

c. Have not less than two (2) tests made for each 100 vertical feet of precast manhole sections.

B. Manhole Steps

1. Acceptable Manufacturers:

a. Aluminum Company of America.

b. Reliance Steel Products, Inc.

c. M. A. Industries, Inc.

d. Or equivalent.

C. Frames and Covers:

1. Acceptable Manufacturers:

a. Etheridge Foundry Co.

b. Neenah Foundry Co.

c. E. L. LeBaron Foundry Company.

d. Or equivalent.

D. Masonry:

1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick. (AASHTO M91-78).

2. Cement: ASTM C-150 (AASHTO M85-79I).

3. Hydrated Lime: ASTM C-207

4. Sand: ASTM C33 (AASHTO M6-65 (1974)).

E. Waterproofing:

1. Acceptable Manufacturers:

a. Minwax Fibrous Brush Coat, Minwax Co., N.Y., N.Y.

b. Tremco 121 Foundation Coating, Tremco Mfg. Co., Newark, N.J.

c. Or approved equal.

1.3 SUBMITTALS TO THE OWNER/ARCHITECT/ENGINEER

A. Submit shop drawings and manufacturer's literature in conformance with the Contract Documents.

B. Precast Manhole Sections: Field verify angles, dimensions, and elevations prior to casting. Submit test results and receive approval from the Engineer prior to delivery to the site.

PART 2 - PRODUCTS

2.1 PRECAST MANHOLE SECTIONS

A. Dimensions, shall be as shown on the Drawings:

1. Base & Riser Sections:

a. Diameter: As shown on the Drawings.

b. Length: As required.

c. Wall Thickness: Not less than five (5) inches.

d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.

e. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

2. Tops:

a. Diameter: Eccentric cone type, 24 inches I.D. at top, 48 inches I.D. at bottom unless otherwise shown on the Drawings.

b. Length: four (4) feet.

c. Wall thickness: Not less than five (5) inches at the base, tapering to not less than eight (8) inches at the top.

d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.

e. Exterior face of cone sections shall not flare out beyond the vertical.

f. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

3. Flat Slab Tops:

a. Location: Where shallow installations do not permit the use of a cone-type top and where indicated on the Drawings.

b. Slab thickness: Not less than six (6) inches.

c. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

B. Openings:

1. Provide openings in the risers to receive pipes entering the manhole.

2. Make openings at the manufacturing plant.

3. Size: To provide a uniform annular space between the outside wall of pipe and riser.

4. Location: To permit setting of the entering pipes at the correct elevations.

5. Openings shall have a flexible watertight union between pipe and the manhole base.

    a. Cast into the manhole base and sized to the type of pipe being used.

    b. Type of flexible joint being used shall be approved by the Engineer. Install materials according to the Manufacturer's instructions.

        1. Lock Joint Flexible Manhole Sleeve made by Interpace Corporation.

        2. Kor N Seal made by National Pollution Control System, Inc.

        3. Press Wedge II made by Press-Seal Gasket Corporation.

        4. A-Lok Manhole Pipe Seal made by A-Loc Corporation.

        5. Or equivalent.

C. Joints:
Joint gaskets to be flexible self-seating butyl rubber joint sealant installed according to manufacturer's recommendations. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer. Acceptable Materials:

    a. Kent-Seal No. 2

    b. Ram-Nek

    c. Or equivalent.

Joints between precast sections shall conform to related standards and manufacturer's instructions. Provide two rings of sealant at each joint. All manholes greater than six (6) ft. diameter and all manholes used as wet wells, valve pits and other dry-pit type structures shall be installed with exterior joint collars. The joint collar shall be installed according to the manufacturer's instructions. Acceptable materials:

    a. MacWrap exterior joint sealer as manufactured by Mar-Mac Manufacturing Company.

    b. Or equivalent.

D. Waterproofing:

1. The exterior surface of all manholes shall be given two (2) coats of bituminous waterproofing material at an application rate of 75 to 100 square feet per gallon, per coat.

2. The coating shall be applied after the manholes have cured adequately and can be applied by brush or spray in accordance with the manufacturer's written instruction. Sufficient time shall be allowed between coats to permit sufficient drying so that the application of the second coat has no effect on the first coat.

F. Frost Protective Wrapping:

1. The frost protective wrap shall be constructed of an ultraviolet resistant polyethylene material and shall be a minimum thickness of six (6) mils.

2.2 FRAMES AND COVERS

A. Standard Units:

1. Made of cast iron conforming to ASTM A48-76, Class 30 minimum.

2. Have machined bearing surfaces to prevent rocking.

3. Castings shall be smooth with no sharp edges.

4. Constructed to support an HS-20 wheel loading, or as otherwise identified on the Drawings.

5. Dimensions and Style shall conform to the Drawings, Standard castings differing in non-essential details are subject to approval by the Engineer:

a. Covers - solid with "SEWER" in three (3) inch letters diamond pattern.

b. Frame - 24-inch diameter clear opening, with flange bracing ribs.

6. Minimum weight of frame and cover shall be 430 lbs.

B. Water Tight Units:

1. Same features as above for Standard Units, with 22-inch diameter minimum clear opening.

2. Sealing features:

a. Inner lid held by a bronze tightening bolt in a locking bar.

b. Neoprene gasket

c. Water tight pick hole.

3. Minimum weight of frame and cover shall be 510 lbs.

2.3 MANHOLE STEPS

A. Aluminum or polyethylene or polypropylene coated steel safety type designed with a minimum concentrated live load of 300 pounds.

B. Thoroughly clean all surfaces to be embedded with a suitable cleaning agent to ensure that the surfaces are free from all foreign matter such as dirt, oil and grease.

C. Aluminum surfaces to be embedded shall be given a protective coating of an approved heavy-bodied bituminous material. The steps shall become thoroughly dry before being placed into the concrete.

D. All steps shall be factory cast into walls of the precast section so as to form a continuous ladder with a distance of 12-inches between steps.

2.4 MASONRY

A. Brick:
1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.

2. Immediately remove rejected brick from the work.

C. Mortar:

1. Composition (by volume):

a. One (1) part Portland Cement.

b. 1/2 part hydrated lime.

c. 4-1/2 parts sand.

2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed three (3) times the sum of the volume of cement and lime.

C. Cement shall be Type II Portland Cement.

D. Hydrated lime shall be Type S.

D. Sand:

1. Shall consist of inert natural sand.

2. Grading:

Sieve	Percent Passing
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 50	10-30
No. 100	2-10
Fineness Modulus	2.3 - 3.1

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Manhole Sections:

1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.

2. Install riser sections and tops level and plumb.

3. Make all joints watertight.

4. When necessary, cut openings carefully to prevent damage to barrel sections and tops. Solidly fill annular spaces around pipes entering the manholes with non-shrink grout or sealant approved by the Engineer. Replace damaged manhole sections and tops at no additional cost to the Owner.

5. When manhole steps are included in the Work, install barrel sections and tops so that steps are in alignment.

B. Drop Manholes:
The difference in elevation between the invert of the inlet pipe to the invert of the outlet pipe shall not exceed 24 inches without use of a drop structure. Where difference in elevation exceeds 24 inches, construct a drop manhole as shown on the Drawings or as directed by the Engineer. Drop manholes shall be external assemblies unless otherwise noted.

B. Adjust to Grade:

1. Adjust tops of manholes to grade with brick masonry.

2. Concrete rings are not acceptable for adjusting to grade.

D. Pipe Connections to Manholes: Connect pipes to manholes with joint design and materials approved by the Engineer.

E. Invert Channels:

1. Smooth and semicircular in shape conforming to the inside of the adjacent sewer section.

2. Make changes in direction of flow with smooth curves having a radius as large as permitted by the size of the manhole.

3. Stop the pipes at the inside face of the manhole where changes of direction occur.

4. Form invert channels with brick.

5. Shape invert to make smooth transition in vertical grade.

6. Slope the floor of the manhole to the flow channel, as shown on the Drawings

7. Precast inverts where used shall be reinforced and depicted on shop drawings.

F. Masonry:

1. Laying Brick:

a. Use only clean bricks in brickwork for manholes.

b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.

d. Construct all joints in a neat workmanlike manner. Construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.

e. Outside faces of brick masonry shall be plastered with mortar from ¼-inch to 3/8-inch thick.

f. Completed brickwork shall be watertight.

2. Curing:

a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.

b. Protect brick masonry from the weather and frost as required.

G. Frames and Covers:

1. Set all frames in a full bed of mortar, true to grade and concentric with the manhole opening.

2. Completely fill all voids beneath the bottom flange to make a watertight fit.

3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the manhole all around its circumference.

4. Clean the frame seats before setting the covers in place.

G. Plugging and Patching:

1. Fill all exterior cavities with non-shrink grout and with bituminous waterproofing once the concrete and mortar has set.

2. Touchup damaged water proofing.

I. Cleaning:
Thoroughly clean manholes, steps, frames and covers of all debris and foreign matter.

J. Bedding and Backfilling:

1. Bedding of manholes shall be 6 inches of 3/4" screened stone.

2. Backfill a minimum of 18 inches all around manhole with crushed stone.

K. Frost Protective Wrap:

1. The Contractor shall comply with the manufacturer's instructions for the particular conditions of installations in each case.

2. Clean each manhole exterior of all dirt and remove any sharp protrusions.

3. Apply two (2), six (6) inch wide vertical strips of bituminous waterproofing material and/or duct tape from the top to bottom of the manhole per layer.

4. Prior to installing pipe through each manhole or valve pit, wrap each manhole to the maximum depth of frost penetration, but not less than five (5) feet below grade, with four (4) layers of the polyethylene material by beginning the wrap at the adhesive strip and proceeding around the manhole, valve pit, etc., continuously by overlapping the adhesive strip by 24 inches on the final layer. Cut the polyethylene wrap in areas where piping exits the manhole. The size of the cut is to be equivalent to the pipe's outside diameter.

5. Tuck and pleat the polyethylene wrap at the top of each manhole in a continuous manner, minimizing the size of each fold. Extend the polyethylene wrap past the top of the manhole frame and temporarily tuck the remainder inside the frame, until final backfill and paving.

6. In paved areas, cut the polyethylene wrap flush with the manhole rim after the pavement is in place.

7. In unpaved areas, pull the polyethylene wrap together, and tie around frame with galvanized wire.

8. Protect the installed frost barrier from harmful weather exposures and from possible physical abuses, where possible by prompt installation of concealing work or, where that is not possible, by temporary covering or enclosure.

9. Backfill around the manhole/frost barrier with material as outlined in J.

3.2 MANHOLE TESTING

A. General:

1. Perform vacuum testing on all manholes.

2. All testing must be performed in the presence of the Engineer.

3. Suitably plug all pipes entering each manhole and brace plugs to prevent blow out.

B. Vacuum Test:

1. The manhole shall be tested by a vacuum test after assembly of the manhole, connection piping and backfilling.

2. Plug all lifting holes completely with non-shrink grout.

3. Properly tighten all boot clamps and brace all plugs to prevent them from being sucked into the manhole.

4. Install the testing equipment according to the manufacturer's instructions.

5. A vacuum of 10 inches of Hg shall be drawn on the manhole and the loss of one (1) inch of Hg vacuum timed. The manhole shall be considered to have passed the test if the time for the loss of 1 inch Of Hg vacuum is two (2) minutes or longer.

6. If the manhole fails the initial test, the Contractor shall locate the leak(s) and make repairs. The manhole shall be retested until a satisfactory test result is obtained.

7. If a satisfactory vacuum test cannot be obtained, the manhole shall be water exfiltration tested and repaired as necessary.

C. Manhole Repairs:

1. Correct leakage by reconstruction, replacement of gaskets and/or other methods as approved by the Engineer.

2. The use of lead-wool or expanding mortar will not be permitted.

D. After the manholes have been backfilled and prior to final acceptance, any signs of Leaks or weeping visible inside the manholes shall be repaired and the manhole made watertight.

END OF SECTION 33 05 13

SECTION 33 42 13 - PIPE CULVERTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Provide and install culvert, surface drain, and storm drain pipe and sections of the type(s), size(s) and in the location(s) shown on the Drawings and as specified herein.

B. Related Sections:

1. Section 31 23 16 – Excavation

2. Section 31 23 16.13 – Trenching

3. Section 31 32 19.23 - Geotextile Layer Separation

4. Section 33 46 00 – Subdrainage

5. Section 33 49 13 - Storm Drainage Manholes, Frames and Covers

1.2 SUBMITTALS

A. Submit, in duplicate, sworn certificates of inspections and tests performed at the location of manufacturers.

B. Submit Shop Drawings in accordance with the General Conditions of the Construction Contract.

1.3 DELIVERY, STORAGE AND HANDLING

A. Exercise care when handling pipe to prevent damage of any nature to pipe and finish.

B. Immediately remove damaged materials and replace in kind at no additional cost to the Owner.

C. Store materials above ground on platforms, skids or other adequate supports.

1.4 FIELD QUALITY CONTROL

A. Acceptance will be based on material tests and inspection of the complete product.

B. Inspection may be made at the place of manufacture, local distributor or on the construction site after delivery. All Pipe Culvert materials are subject to rejection at any time throughout the project due to failure to meet specifications.

C. No damaged or rejected pipes are to be installed permanently for the Work. Contractor must immediately remove all rejected or damaged pipe culvert materials from the project site if not needed to complete the Work. Contractor is responsible for replacing damaged or rejected pipe materials at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe shall be one of the following as specified on the Drawings; substitutions are only allowed with the approval of the Engineer.

1. Corrugated Aluminum Alloy Pipe
2. Aluminum Coated (Type 2) Corrugated Steel Pipe
3. Zinc-Coated (Galvanized) Corrugated Steel Pipe
4. Steel Structural Plate Pipe
5. Aluminum Alloy Structural Plate Pipe
6. Polymer Precoated, Galvanized Corrugated Steel Pipe
7. Polyvinyl Chloride (PVC) Pipe
8. Corrugated Polyethylene (PE) and High Density Polyethylene (HDPE) Pipe
9. Reinforced Concrete Pipe

B. Materials for pipes shall conform to AASHTO Standards.

1. Corrugated Aluminum Alloy Pipe. This pipe and special fittings such as elbows, tees and wyes shall conform to the requirements of AASHTO M196, Type I or II. Special sections, such as elbows and metal end sections shall be of the gage called for in the Contract Documents and shall conform to the applicable requirements of AASHTO M196. Aluminum sheet shall conform to the requirements of AASHTO M197.

2. Aluminum Coated (Type 2) Corrugated Steel Pipe. This pipe shall conform to the requirements of AASHTO M36 using steel sheet conforming to AASHTO M274.

3. Zinc - Coated (Galvanized) Corrugated Steel Pipe. This pipe shall conform to the requirements of AASHTO M36 using steel sheet conforming to AASHTO M218.

4. Steel Structural Plate Pipe. Plates, bolts, nuts and other accessories shall conform to the requirements of AASHTO specification M167 and the following additional requirements:

   a. All shop welding shall meet the requirements of the latest edition of AWS D1.1, Structural Welding Code - Steel.

   b. Annually the fabricator shall have quality control tests performed on uncoated random samples of the lightest and heaviest gage plates produced by welding. The sampling and testing shall be done by a recognized independent testing agency and copies of the test reports, including all welding parameters, shall be submitted to the Engineer as requested.

   c. No field welding will be allowed.

5. Aluminum Alloy Structural Plate Pipe. Plates, bolts and nuts for this pipe shall conform to the requirements of AASHTO M219.

6. Polymer Precoated, Galvanized Corrugated Steel Pipe. This pipe and special fittings such as elbows, tees and wyes shall conform to the requirements of AASHTO M245, Type I, with Type B coating for the pipe as specified in AASHTO M246 with the thinner coating on the outside.

7. Polyvinyl chloride (PVC) Pipe. This pipe and fittings shall conform to the requirements of AASHTO M278. All pipe shall be supplied with gasket type joints meeting the requirements of ASTM D3212.

8. Corrugated polyethylene (PE & HDPE) pipe. This pipe and fittings shall conform to the requirements of AASHTO M252 and AASHTO M294.

9. Reinforced Concrete Pipe. This pipe shall conform to the requirements of AASHTO M170, (ASTM C76) except paragraph 6.2. Elliptical pipe shall conform to the requirement of AASHTO M207, except paragraph 6.2. Unless otherwise specified, pipe wall design and use of elliptical reinforcement in circular pipe are optional. Pipe arch shall conform to the requirements of AASHTO M206, except paragraph 6.2. Aggregates shall meet the requirements of MDOT Standard Specifications Subsections 703.01 and 703.02 for fine aggregates and coarse aggregates respectively, except that grading requirements are hereby waived. Precast reinforced concrete special sections shall conform to the requirements of the cited specifications to the extent to which they apply.

C. Area Drain Assemblies. Unless otherwise noted, provide Nyloplast Inline Drain with 8" Bronze Insert Grate. Drain Basin not required.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas to receive piping for the following

1. Obstructions that adversely affect the installation and quality of the work.

2. Deviations beyond allowable tolerances for clearances.

B. Examine pipe and fittings before installation to assure no defective materials are incorporated into the Work.

C. Start the work only when conditions are satisfactory.

D. Remove and replace all defective materials at no additional cost to the Owner.

3.2 INSTALLATION

A. Do not install pipe, nor backfill, between December 15th and April 1st without the written permission of the Engineer.

B. Begin laying the pipe at the downstream end. Install bells upstream per manufacture's recommendations.

C. Place metal pipe with the longitudinal laps of seams at the sides and the outside laps of circumferential joints pointing up grade.

D. Lay paved or partially lined pipe with the lining on the bottom.

E. Join flexible pipe sections and metal end sections by coupling bands as recommended by the manufacturer.

F. Assemble the plates for structural plate arches according to the manufacturer's assembly instructions and as shown on the Drawings.

G. Place geotextile and armor stones at inlets and outlets as indicated in the Drawings.

END OF SECTION 33 42 13

SECTION 33 46 00 - SUBDRAINAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Underdrain system for paved sections and building perimeter.

1.2 RELATED SECTIONS

A. Section 31 05 16 - Aggregates for Earthwork

B. Section 31 23 16.13 - Trenching

C. Section 31 32 19.23 - Geotextile Layer Separation

1.3 REFERENCES

A. ASTM D2729 – Poly(vinyl chloride) (PVC) Sewer Pipe and Fittings.

1.4 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.5 PROJECT RECORD DOCUMENTS

A. Record location of pipe runs, connections, cleanouts and principle invert elevations.

1.6 FIELD MEASUREMENTS

A. Verify that field measurements and elevations are as indicated on the construction Drawings.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. Poly(vinyl chloride) Pipe (Perforated): ASTM D2729; plain end, provide inside diameter as indicated on the Drawings; with required fittings.

2.2 AGGREGATE AND BEDDING

A. As indicated in the Drawings or as approved by the Engineer.

2.3 ACCESSORIES

A. Pipe Coupling: Integral to pipe or solid plastic solvent weld.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with aggregate.

B. Remove large stones or other hard matter which could damage drainage piping or impede consistent backfilling or compaction.

3.3 INSTALLATION

A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.

B. Lay pipe to slope gradients of 1/4 inch per foot or as noted on Drawings with maximum variation from true slope of 1/8 inch in 10 feet.

C. Place pipe with perforations facing down, or as indicated in the Drawings. Mechanically join pipe ends.

3.4 FIELD QUALITY CONTROL

A. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.5 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION 33 46 00

SECTION 33 49 13 - STORM DRAINAGE MANHOLES, FRAMES, AND COVERS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Construct catch basins, grates, frames and brick masonry in conformance with the dimensions and locations shown on the Drawings.

B. Related Work Specified Elsewhere: (Where applicable)

1. Pipe Culverts, Trenching, Excavation, Fill are specified in the appropriate Sections.

1.2 QUALITY ASSURANCE

A. Precast Catch Basin Base, Barrel and Top Sections:

1. Conform to ASTM C478-72 (AASHTO M199-795) except as modified herein, on the Drawings, or as directed by the Engineer.

2. Average strength of 4,000 psi at 28 days

3. Testing:

a. Determine concrete strength by tests on six (6) inch by 12 inch vibrated test cylinders cured in the same manner as the bases, barrels and tops.

b. Have tests conducted at manufacturer's plant or at an approved testing laboratory.

c. Have not less than two (2) tests made for each 100 vertical feet of precast catch basin sections.

B. Frames and Covers:

1. Acceptable Manufacturers:

a. Etheridge Foundry Company

b. Neenah Foundry Company

c. E. L. LeBaron Foundry Company

d. Or equivalent.

C. Masonry:

1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick. (AASHTO M91-78).

2. Cement: ASTM C-150.(AASHTO M85-79I)

3. Hydrated Lime: ASTM C-207.

4. Sand: ASTM C33. (AASHTO M6-65 C197A)).

1.3 SUBMITTALS TO THE ENGINEER

A. Submit shop Drawings and manufacturer's literature in conformance with the General Conditions of the Construction Documents.

B. Bases, Barrel Sections and Tops: Submit test results and receive approval from the Engineer prior to delivery to the site.

PART 2 - PRODUCTS

2.1 PRECAST CATCH BASIN SECTIONS

A. Dimensions, as shown on the Drawings.

B. Use flat tops or eccentric cones as appropriate. Exterior face of cone sections shall not flare out beyond the vertical.

C. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to insure accurate joint surfaces.

D. Constructed to support an HS-20 wheel loading.

E. Openings:

1. Provide openings in the risers to receive pipes entering the catch basin of the types and materials approved by the Engineer.

2. Make openings at the manufacturing plant or cut openings in the field.

3. Size: To provide a uniform annular space between the outside wall of pipe and the riser.

4. Location: To permit setting of the entering pipes at the correct elevations.

F. Joints:

1. Joint gaskets to be flexible self-seating butyl rubber joint sealant installed according to manufacturer's recommendations. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer. Acceptable Materials:

    a. Kent-Seal No. 2

    b. Ram-Nek

    c. Or equivalent.

2. Joints between precast sections shall conform to related standards and manufacturer's instructions.

2.2 FRAMES AND GRATES

A. All essential details of design shall conform to the Drawings. Standard castings differing in non-essential details may be approved by the Engineer.

B. All frames and grates shall be made of cast iron and shall have machined bearing surfaces to prevent rocking under traffic.

C. Grate castings will be smooth with no sharp edges.

D. Constructed to support an HS-20 wheel loading.

2.3 MASONRY

A. Brick:

1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.

2. Immediately remove rejected brick from the work.

B. Mortar:

1. Composition (by volume):

    a. 1 part portland cement.

    b. 1/2 part hydrated lime.

    c. 4-1/2 parts sand.

2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed three (3) times the sum of the volume of cement and lime.

C. Cement:

1. Shall be Type II Portland cement.

D. Hydrated Lime:

1. Shall be Type S.

E. Sand:

1. Shall consist of inert natural sand.

2. Grading:

Sieve	Percent Passing
3/8	100
4	95-100
8	80-100
16	50-85
50	10-30
100	2-10
Fineness Modulus	2.3 - 3.1

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Precast Catch Basin Sections:

1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.

2. Install barrels and tops level and plumb.

3. Make all joints water tight.

4. Solidly fill annular spaces around pipes entering the catch basin with non-shrink grout or other material approved by the Engineer.

5. Cut openings (as required) carefully to prevent damage to barrel sections and tops. Damaged barrel sections and tops shall be replaced by the Contractor at no additional expense to the Owner.

B. Pipe Connections to Catch Basins: Connect pipes to catch basins with joint design and materials approved by the Engineer.

B. Masonry:

1. Laying Brick:

a. Use only clean bricks in brickwork for catch basins.

b. Moisten the brick by suitable means until they are neither too dry to absorb water from the mortar or so wet as to be slippery when laid.

c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.

d. Construct all joints in a neat workmanlike manner; construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.

2. Curing:

a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.

b. Protect brick masonry from the weather and frost as required.

C. Frames and Grates:

1. Set all frames in a full bed of mortar, true to grade and concentric with the catch basin opening.

2. Completely fill all voids beneath the bottom flange to make a watertight fit.

3. Place a ring of mortar at least 1 inch thick around the outside of the bottom flange, extending to the outer edge of the catch basin all around its circumference.

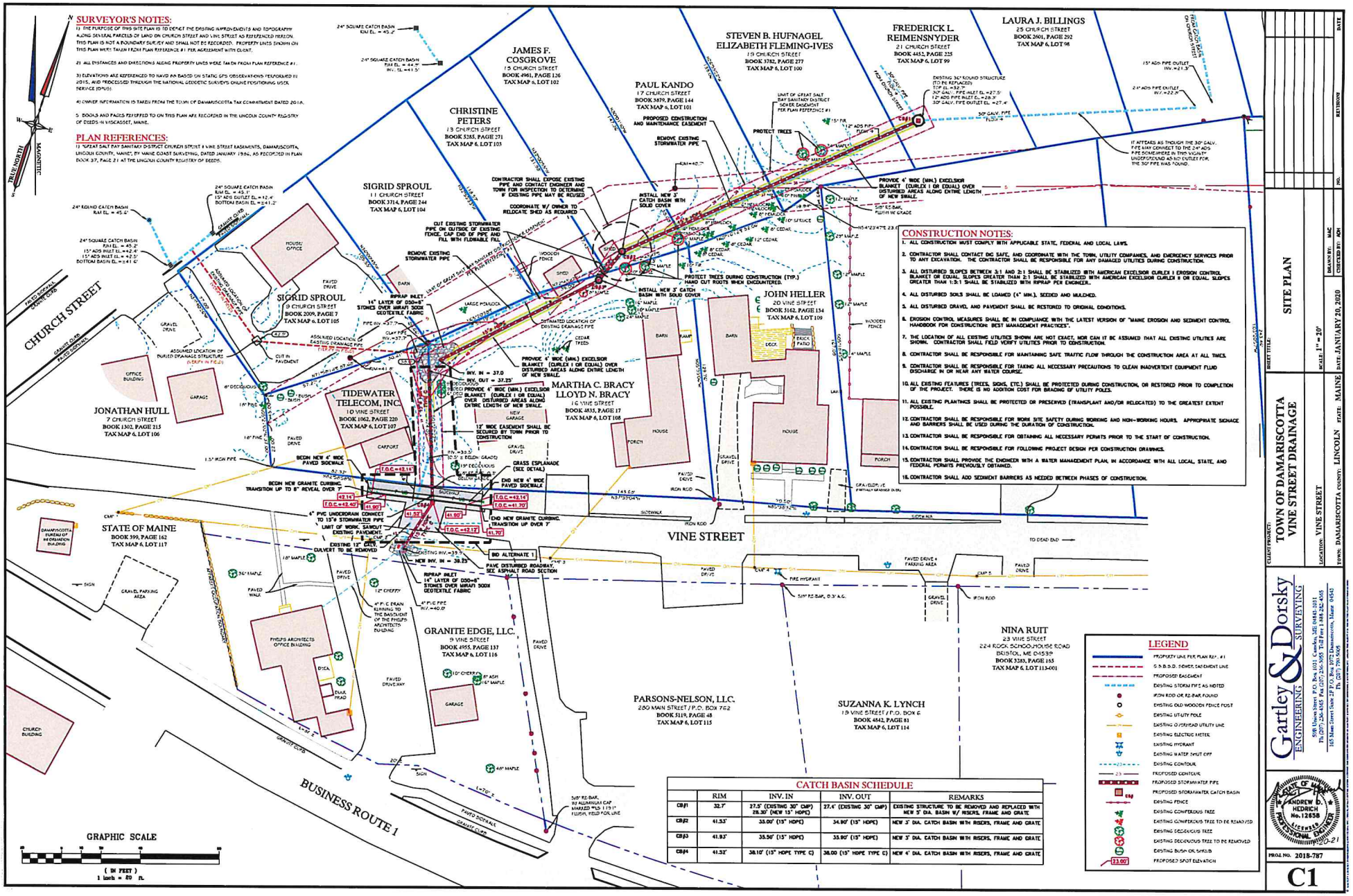
4. Clean the frame seats before setting the covers in place.

E. Bedding and Backfilling:

1. Bedding material of each catch basin shall be six (6) inches of compacted 3/4 inch crushed stone as indicated in the Drawings, or as approved by the Engineer.

2. Backfill all around each catch basin with a minimum 18 inches of granular borrow as indicated in the Drawings.

END OF SECTION 33 49 13


SURVEYOR'S NOTES:
1) THE PURPOSE OF THIS SITE PLAN IS TO DEPICT THE EXISTING IMPROVEMENTS AND TOPOGRAPHY ALONG SEVERAL PARCELS OF LAND ON CHURCH STREET AND VINE STREET AS REFERENCED HEREON. THIS PLAN IS NOT A BOUNDARY SURVEY AND SHALL NOT BE RECORDED. PROPERTY LINES SHOWN ON THIS PLAN WERE TAKEN FROM PLAN REFERENCE #1 PER AGREEMENT WITH CLIENT.
2) ALL DISTANCES AND DIRECTIONS ALONG PROPERTY LINES WERE TAKEN FROM PLAN REFERENCE #1.
3) ELEVATIONS ARE REFERENCED TO NAVD 88 BASED ON STATIC GPS OBSERVATIONS PERFORMED IN 2015, AND PROCESSED THROUGH THE NATIONAL GEODETIC SURVEY'S ONLINE POSITIONING USER SERVICE (OPUS).
4) CHIEF INFORMATION IS TAKEN FROM THE TOWN OF DAMARISCOTTA TAX COMMITMENT DATED 2016.
5) BOOKS AND PAGES REFERRED TO ON THIS PLAN ARE RECORDED IN THE LINCOLN COUNTY REGISTRY OF DEEDS IN WISCASSET, MAINE.
PLAN REFERENCES:
1) "GREAT SALT BAY SANITARY DISTRICT CHURCH STREET & VINE STREET EASEMENTS, DAMARISCOTTA, LINCOLN COUNTY, MAINE", BY MAINE COAST SURVEYING, DATED JANUARY 1986, AS RECORDED IN PLAN BOOK 37, PAGE 21 AT THE LINCOLN COUNTY REGISTRY OF DEEDS.
TRUE NORTH
MAGNETIC
CONSTRUCTION NOTES:
1. ALL CONSTRUCTION MUST COMPLY WITH APPLICABLE STATE, FEDERAL AND LOCAL LAWS.
2. CONTRACTOR SHALL CONTACT DIG SAFE, AND COORDINATE WITH THE TOWN, UTILITY COMPANIES, AND EMERGENCY SERVICES PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGED UTILITIES DURING CONSTRUCTION.
3. ALL DISTURBED SLOPES BETWEEN 3:1 AND 2:1 SHALL BE STABILIZED WITH AMERICAN EXCELSIOR CURLEX I EROSION CONTROL BLANKET OR EQUAL. SLOPES GREATER THAN 2:1 SHALL BE STABILIZED WITH AMERICAN EXCELSIOR CURLEX II OR EQUAL. SLOPES GREATER THAN 1:3:1 SHALL BE STABILIZED WITH RIPRAP PER ENGINEER.
4. ALL DISTURBED SOILS SHALL BE LOAMED (4" MIN.), SEEDED AND MULCHED.
5. ALL DISTURBED GRAVEL AND PAVEMENT SHALL BE RESTORED TO ORIGINAL CONDITIONS.
6. EROSION CONTROL MEASURES SHALL BE IN COMPLIANCE WITH THE LATEST VERSION OF "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES".
7. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ARE NOT EXACT, NOR CAN IT BE ASSUMED THAT ALL EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITIES PRIOR TO CONSTRUCTION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFE TRAFFIC FLOW THROUGH THE CONSTRUCTION AREA AT ALL TIMES.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING ALL NECESSARY PRECAUTIONS TO CLEAN INADVERTENT EQUIPMENT FLUID DISCHARGE IN OR NEAR ANY WATER COURSE.
10. ALL EXISTING FEATURES (TREES, SIGNS, ETC.) SHALL BE PROTECTED DURING CONSTRUCTION, OR RESTORED PRIOR TO COMPLETION OF THE PROJECT. THERE IS NO ADDITION COST FOR BRACING OF UTILITY POLES.
11. ALL EXISTING PLANTINGS SHALL BE PROTECTED OR PRESERVED (TRANSPLANT AND/OR RELOCATED) TO THE GREATEST EXTENT POSSIBLE.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR WORK SITE SAFETY DURING WORKING AND NON-WORKING HOURS. APPROPRIATE SIGNAGE AND BARRIERS SHALL BE USED DURING THE DURATION OF CONSTRUCTION.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO THE START OF CONSTRUCTION.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING PROJECT DESIGN PER CONSTRUCTION DRAWINGS.
15. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A WATER MANAGEMENT PLAN, IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL PERMITS PREVIOUSLY OBTAINED.
16. CONTRACTOR SHALL ADD SEDIMENT BARRIERS AS NEEDED BETWEEN PHASES OF CONSTRUCTION.
CATCH BASIN SCHEDULE
CB#1 | RIM 32.7' | INV. IN 27.5' (EXISTING 30" CMP) 28.30' (NEW 15" HDPE) | INV. OUT 27.4' (EXISTING 30" CMP) | REMARKS EXISTING STRUCTURE TO BE REMOVED AND REPLACED WITH NEW 5' DIA. BASIN W/ RISERS, FRAME AND GRATE
CB#2 | RIM 41.53' | INV. IN 33.00' (15" HDPE) | INV. OUT 34.90' (15" HDPE) | NEW 3' DIA. CATCH BASIN WITH RISERS, FRAME AND GRATE
CB#3 | RIM 41.93' | INV. IN 35.50' (15" HDPE) | INV. OUT 35.90' (15" HDPE) | NEW 3' DIA. CATCH BASIN WITH RISERS, FRAME AND GRATE
CB#4 | RIM 41.52' | INV. IN 38.10' (15" HDPE TYPE C) | INV. OUT 38.00' (15" HDPE TYPE C) | NEW 4' DIA. CATCH BASIN WITH RISERS, FRAME AND GRATE
LEGEND
PROPERTY LINE PER PLAN REF. #1
S.S.B.S.D. SEWER EASEMENT LINE
PROPOSED EASEMENT
EXISTING STORM PIPE AS NOTED
IRON ROD OR RE-BAR FOUND
EXISTING OLD WOODEN FENCE POST
EXISTING UTILITY POLE
EXISTING OVERHEAD UTILITY LINE
EXISTING ELECTRIC METER
EXISTING HYDRANT
EXISTING WATER SHUT OFF
EXISTING CONTOUR
PROPOSED CONTOUR
PROPOSED STORMWATER PIPE
PROPOSED STORMWATER CATCH BASIN
EXISTING FENCE
EXISTING CONIFEROUS TREE
EXISTING CONIFEROUS TREE TO BE REMOVED
EXISTING DECIDUOUS TREE
EXISTING DECIDUOUS TREE TO BE REMOVED
EXISTING BUSH OR SHRUB
PROPOSED SPOT ELEVATION
GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.
CHURCH STREET
VINE STREET
BUSINESS ROUTE 1
JONATHAN HULL
7 CHURCH STREET
BOOK 1302, PAGE 215
TAX MAP 6, LOT 106
SIGRID SPROUL
9 CHURCH STREET
BOOK 2009, PAGE 7
TAX MAP 6, LOT 105
TIDEWATER TELECOM, INC.
10 VINE STREET
BOOK 1062, PAGE 220
TAX MAP 6, LOT 107
MARTHA C. BRACY
LLOYD N. BRACY
16 VINE STREET
BOOK 4835, PAGE 17
TAX MAP 6, LOT 108
JOHN HELLER
20 VINE STREET
BOOK 5162, PAGE 134
TAX MAP 6, LOT 109
STATE OF MAINE
BOOK 399, PAGE 162
TAX MAP 6, LOT 117
GRANITE EDGE, LLC.
9 VINE STREET
BOOK 4955, PAGE 137
TAX MAP 6, LOT 116
PARSONS-NELSON, LLC.
220 MAIN STREET / P.O. BOX 762
BOOK 5119, PAGE 48
TAX MAP 6, LOT 115
SUZANNA K. LYNCH
19 VINE STREET / P.O. BOX 6
BOOK 4542, PAGE 81
TAX MAP 6, LOT 114
NINA RUIT
23 VINE STREET
224 ROCK SCHOOLHOUSE ROAD
BRISTOL, ME 04539
BOOK 3283, PAGE 165
TAX MAP 6, LOT 113-001
JAMES F. COSGROVE
15 CHURCH STREET
BOOK 4961, PAGE 126
TAX MAP 6, LOT 102
CHRISTINE PETERS
13 CHURCH STREET
BOOK 5265, PAGE 271
TAX MAP 6, LOT 103
PAUL KANDO
17 CHURCH STREET
BOOK 3879, PAGE 144
TAX MAP 6, LOT 101
STEVEN B. HUFNAGEL
ELIZABETH FLEMING-IVES
19 CHURCH STREET
BOOK 3782, PAGE 277
TAX MAP 6, LOT 100
FREDERICK L. REIMENSNYDER
21 CHURCH STREET
BOOK 4653, PAGE 255
TAX MAP 6, LOT 99
LAURA J. BILLINGS
25 CHURCH STREET
BOOK 2601, PAGE 292
TAX MAP 6, LOT 98
SIGRID SPROUL
11 CHURCH STREET
BOOK 3714, PAGE 244
TAX MAP 6, LOT 104
DAMARISCOTTA BUREAU OF REVENUE BUILDING
PHELPS ARCHITECTS OFFICE BUILDING
CHURCH BUILDING
GRAVEL PARKING AREA
BID ALTERNATE 1
PAVE DISTURBED ROADWAY SEE ASPHALT ROAD SECTION
PROVIDE 4' WIDE (MIN.) EXCELSIOR BLANKET (CURLEX I OR EQUAL) OVER DISTURBED AREAS ALONG ENTIRE LENGTH OF NEW SWALE
INSTALL NEW 3' CATCH BASIN WITH SOLID COVER
REMOVE EXISTING STORMWATER PIPE
PROTECT TREES DURING CONSTRUCTION (TYP.) HAND CUT ROOTS WHEN ENCOUNTERED.
CONTRACTOR SHALL EXPOSE EXISTING PIPE AND CONTACT ENGINEER AND TOWN FOR INSPECTION TO DETERMINE IF EXISTING PIPE MAY BE REUSED
COORDINATE W/ OWNER TO RELOCATE SHED AS REQUIRED
CUT EXISTING STORMWATER PIPE ON OUTSIDE OF EXISTING FENCE, CAP END OF PIPE AND FILL WITH FLOWABLE FILL
RIPRAP INLET 14" LAYER OF D50=8" STONES OVER MIRAFI 500X GEOTEXTILE FABRIC
4" PVC UNDERDRAIN CONNECT TO 15"Ø STORMWATER PIPE
EXISTING 12" CATV CULVERT TO BE REMOVED
4" P.V.C. DRAIN RUNNING TO THE BASEMENT OF THE PHELPS ARCHITECTS BUILDING
BEGIN NEW GRANITE CURBING. TRANSITION UP TO 8" REVEAL OVER 7'
END NEW GRANITE CURBING. TRANSITION UP OVER 3'
BEGIN NEW 4' WIDE PAVED SIDEWALK
END NEW 4' WIDE PAVED SIDEWALK
GRASS ESPLANADE (SEE DETAIL)
12' WIDE EASEMENT SHALL BE SECURED BY TOWN PRIOR TO CONSTRUCTION
PROVIDE 4' WIDE (MIN.) EXCELSIOR BLANKET (CURLEX I OR EQUAL) OVER DISTURBED AREAS ALONG ENTIRE LENGTH OF NEW SWALE.
INV. IN = 37.0
INV. OUT = 37.25'
IT APPEARS AS THOUGH THE 30" GALV. PIPE MAY CONNECT TO THE 24" ADS PIPE SOMEWHERE IN THIS VICINITY. UNDERSTAND AS NO OUTLET FOR THE 30" PIPE WAS FOUND.
TO DEAD END
FIRE HYDRANT
IRON ROD
5/8" RE-BAR, 0.3' A.G.
5/8" RE-BAR, W/ ALUMINUM CAP MARKED "PLS 1179" FLUSH, FIELD FOR LINE
CLIENT/PROJECT: TOWN OF DAMARISCOTTA VINE STREET DRAINAGE
LOCATION: VINE STREET
TOWN: DAMARISCOTTA COUNTY: LINCOLN STATE: MAINE
SHEET TITLE: SITE PLAN
SCALE: 1" = 20'
DATE: JANUARY 20, 2020
DRAWN BY: MAC
CHECKED BY: ADH
NO. REVISIONS DATE
Gartley & Dorsky ENGINEERING SURVEYING
508 Union Street, P.O. Box 1031, Camden, ME 04843-1031, Ph. (207) 236-3565, Toll Free 1-888-242-4565
165 Main Street Suite 2F P.O. Box 1072 Damariscotta, Maine 04543, Ph. (207) 790-5605
STATE OF MAINE ANDREW D. HEDRICH No. 12658 LICENSED PROFESSIONAL ENGINEER
12-20-21
PROJ. NO. 2018-787
C1

EROSION & SEDIMENTATION CONTROL NOTES

IN ORDER TO PROTECT THE SOIL AND WATER RESOURCES OF THIS DEVELOPMENT AND ADJACENT LANDS, THE FOLLOWING ACTIONS SHALL BE TAKEN:

(WHEN CONSTRUCTION IS INITIATED ON FROZEN GROUND, WOOD WASTE COMPOST/BARK FILTER BERM SHALL BE UTILIZED IN LIEU OF SILT FENCE. SEE DETAIL, THIS SHEET.)

A. EROSION CONTROL/TEMPORARY MEASURES

THE FOLLOWING TEMPORARY MEASURES TO CONTROL EROSION AND SEDIMENTATION SHALL BE USED.

1. SEDIMENT BARRIER (SILT FENCE OR WOOD WASTE COMPOST/BARK FILTER (BERM) WILL BE INSTALLED AROUND THE LIMITS OF CLEARING ASSOCIATED WITH EACH PORTION OF THIS PROJECT. THE CONTRIBUTING DRAINAGE AREA IS LESS THAN ¼ ACRE PER 100 FT. OF BARRIER LENGTH (THE MAXIMUM LENGTH OF SLOPE ABOVE THE BARRIER IS 100 FEET AND THE MAXIMUM GRADIENT BEHIND THE BARRIER IS 50 PERCENT (2:1). IF THE SLOPE IS GREATER, OTHER MEASURES SUCH AS DIVERSIONS MAY BE NECESSARY TO REDUCE THE SLOPE LENGTH. SEDIMENT BARRIER SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED. SEDIMENT BARRIER WILL BE INSTALLED TO SPECIFICATIONS OUTLINED IN THE MOST RECENT MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES.
2. GROUND AREA OPENED OR EXPOSED, WHETHER DIRECTLY OR INDIRECTLY DUE TO THE PROJECT CONSTRUCTION, SHALL BE MINIMIZED AND SHALL BE STABILIZED WITHIN 15 DAYS OF THE INITIAL DISTURBANCE OF THE MINERAL SOIL, AND SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING.
3. TEMPORARY SOIL STABILIZATION SHALL BE EITHER BY TEMPORARY MULCHING, TEMPORARY SEEDING, PERMANENT BASE GRAVEL, OR ASPHALT BASE COURSE AS FOLLOWS:
   - A. TEMPORARY SEEDING: SEED SHALL BE AROOSTOOK RYE APPLIED AT 3.0#/1000 sf. LIME SHALL BE AGRICULTURAL GROUND LIMESTONE APPLIED AT 138#/1000 sf. FERTILIZER SHALL BE 10-10-10 CLASSIFICATION APPLIED AT 13.8#/1000 sf. MULCH SHALL CONSIST OF HAY OR STRAW MULCH AND SPREAD EVENLY AT A RATE OF 70-90#/1000 sf. TEMPORARY SEEDINGS SHALL ONLY BE MADE BETWEEN APRIL 15TH AND OCTOBER 15TH, AND SHALL NOT BE PLACED OVER SNOW. IF THE SEEDING IS NOT COMPLETED BY OCTOBER 15TH, ADDITIONAL MULCH SHALL BE ADDED TO PROVIDE ADEQUATE WINTER PROTECTION.
   - B. TEMPORARY MULCHING: MULCH SHALL CONSIST OF CHOPPED HAY OR STRAW MULCH AND SPREAD BY MECHANICAL BLOWER, OR BY HAND IF ADJACENT TO WETLAND HABITAT, EVENLY AT A RATE OF 150- 200#/1000 sf. TEMPORARY MULCH SHALL BE REMOVED PRIOR TO PERMANENT SOIL STABILIZATION. MULCH MUST NOT BE PLACED OVER SNOW.
   - C. PERMANENT BASE GRAVEL: BASE GRAVEL UNDER PAVEMENT SHALL BE SUITABLE AS TEMPORARY SOIL STABILIZATION UNDER THE FOLLOWING CONDITIONS:
     - SLOPES SHALL BE LESS THAN 3 PERCENT.
     - GRAVEL SHALL MEET THE SPECIFICATIONS FOR BASE OR SUB-BASE GRAVEL FOR THE PROPOSED COMPLETED PAVEMENT.
   - D. ASPHALT BASE COURSE: ASPHALT BASE SHALL MEET THE SPECIFICATIONS FOR THE ASPHALT BASE COURSE FOR THE PROPOSED COMPLETED PAVEMENT.
4. PRIOR TO TOPSOIL REMOVAL, SILT FENCING SHALL BE STAKED AS SHOWN ON THE PLAN.
5. STRIPPED TOPSOIL SHALL BE STOCKPILED FOR REUSE DURING FINAL GRADING. THE PILE SHALL BE HEAVILY MULCHED WITH HAY WHILE STOCKPILED.
6. TO REDUCE OR ELIMINATE THE TRACKING OF EARTH MATERIALS ONTO PUBLIC RIGHT-OF-WAYS, A STABILIZED PAD OF CRUSHED STONE LOCATED AT THE DESIGNATED ACCESS POINT SHALL BE ESTABLISHED.
7. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
8. BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED TO STOP SOIL FROM LEAVING THE SITE.

B. EROSION CONTROL/PERMANENT MEASURES

1. EXCESSIVELY STEEP SLOPES (2:1 OR GREATER) SHALL BE PROTECTED BY EROSION CONTROL EXCELSIOR BLANKET WITH BIODEGRADABLE PLASTIC OR JUTE MESH AFTER SEEDING.
2. PERMANENT SEEDING SHALL BE PERFORMED DURING CONSTRUCTION OPERATIONS AS EACH DISTURBED AREA HAS BEEN BROUGHT TO FINISH GRADE. ALL AREAS SHALL BE SEEDED WITH ONE OF THE FOLLOWING:
   - A. CONSERVATION/WILDLIFE MIX
     - 20% KENTUCKY BLUEGRASS
     - 30% CREEPING RED FESCUE
     - 15% PERENNIAL RYEGRASS
     - 8% WHITE CLOVER
     - 15% ANNUAL RYEGRASS
     - 14% PENNFINE RYEGRASS
   - B. COTTAGE MIX
     - 30% CREEPING RED FESCUE
     - 15% PERENNIAL RYEGRASS
     - 20% ANNUAL RYEGRASS
     - 15% TALL FESCUE
   - C. PARK MIX
     - 25% KENTUCKY BLUEGRASS
     - 30% CREEPING RED FESCUE
     - 15% CHEWING FESCUE
     - 20% ANNUAL RYEGRASS
     - 10% PERENNIAL RYEGRASS
   - D. NORTHEAST WILDFLOWER MIX (SEE NOTE 4 THIS SECTION)
3. THE CONTRACTOR SHALL MAINTAIN THE SEEDED AND MULCHED AREAS UNTIL FINAL ACCEPTANCE OF THE WORK. MAINTENANCE SHALL CONSIST OF PROVIDING PROTECTION AGAINST TRAFFIC AND REPAIRING AREAS DAMAGED DUE TO WIND, WATER, EROSION, FIRE OR OTHER CAUSES. SUCH DAMAGED AREAS SHALL BE REPAIRED TO RE-ESTABLISH THE CONDITION AND GRADE OF THE SOIL PRIOR TO SEEDING AND SHALL THEN BE RE-FERTILIZED, RE-SEEDED AND RE-MULCHED.
4. PERMANENT WILDFLOWER STABILIZATION: PROVIDE 3" OF LOAM OVER DISTURBED OR NEWLY GRADED SLOPES. APPLY WILDFLOWER SEED MIX ACCORDING TO THE FOLLOWING MIX SPECIFICATIONS. ESTABLISH WILDFLOWER MIX PRIOR TO SEPTEMBER 1. MULCH SHALL BE WEED-SEED FREE STRAW MULCH, APPLIED AT THE RATE OF 4 BALES PER 1000 SQUARE FEET, AS DESCRIBED IN SECTION D, WINTER STABILIZATION. JUTE MULCH NETTING ANCHORING SHALL BE PROVIDED, APPLIED IN CONTINUOUS OVERLAPPING ROLLS WITH THE CONTOUR. NETTING SHALL BE APPLIED FROM THE BOTTOM OF SLOPES UP. 8 GAUGE, 6" PLAIN IRON WIRE STAPLES SHALL BE APPLIED PER THE MANUFACTURER'S RECOMMENDATION.

NORTHEAST WILDFLOWER MIX:
- 14% PERENNIAL LUPINE
- 7% LANCE LEAF COREOPSIS
- 8% DAVEY'S ROCKET
- 8% PURPLE CONEFLOWER
- 5% BLACK EYED SUSAN
- 5% SIBERIAN WALLFLOWER
- 4% CORN POPPY
- 4% EVENING PRIMROSE
- 2% BLANKET FLOWER
- 2% SHASTA DAISY
- 1% NEW ENGLAND ASTER
- 1% WHITE YARROW

ANNUALS:
- 12% BACHELORS BUTTONS
- 8% BABY'S BREATH
- 8% ROCKET LARKSPUR
- 8% SCARLET FLAX
- 2% CATCHFLY
- 1% SPURRED SNAPDRAGON

C. WINTER STABILIZATION

1. PROVIDE MULCH STABILIZATION IN LIEU OF PERMANENT SEEDING AFTER SEPTEMBER 1, IN LIEU OF SODDING AFTER NOVEMBER 15, AND FOR ALL WORK REQUIRING TEMPORARY STABILIZATION AFTER OCTOBER 15 AS FOLLOWS:
2. STRAW MULCH: PLACE STRAW MULCH AT THE APPLICATION RATE OF 150 LBS/1000 sf ON DISTURBED AREAS LESS THAN 8% SLOPE AND NOT SUBJECT TO FLOWING WATER REQUIRING STABILIZATION. ANCHOR ALL MULCH WITH MULCH NETTING AND STAPLES OR WITH STAKES AND TWINE. STAKES AND TWINE SHALL BE APPLIED AT THE RATE OF 4 TO 10 PCS PER SQUARE YARD WITH CRISS-CROSSED TWINE STRUNG TAUT BETWEEN ALL PCS AND SECURED AT EACH PCS WITH ONE OR MORE TURNS OF TWINE.
3. EROSION CONTROL MIX MULCH: APPLY EROSION CONTROL MIX MULCH AS AN ALTERNATIVE TO STRAW MULCH OR MATS ON STEEP SLOPES ONLY AT RATES SPECIFIED IN DEP PUBLICATION "MAINE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES" (MOST RECENT EDITION).
4. MATS: PLACE FABRICATED MULCH AND NETTING CONTROL MATS WITH ANCHORING AS SPECIFIED BY THE MANUFACTURER, TO STABILIZE DISTURBED AREAS AND SLOPES GREATER THAN 8% SUBJECT TO FLOWING WATER (SUCH AS SWALE OR DITCH SECTIONS), OR CUT SLOPE SUBJECT TO WEEPING GROUNDWATER.
5. RIPRAP: ALL RIPRAP MINIMUM D50=2", PLACED IN 4" LIFTS AS AN ALTERNATIVE TO STRAW MATS ON STEEP SLOPES OR FLOWING WATER CONDITIONS.

D. STABILIZATION PERFORMANCE CRITERIA

1. PERMANENT STABILIZATION IS DEFINED AS FOLLOWS:
2. SEEDED AREAS, FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.
3. SODDED AREAS, FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.
4. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REMULCHED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION IF ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.
5. RIPRAP, FOR AREAS STABILIZED WITH RIPRAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIPRAP. STONE MUST BE SIZED APPROPRIATELY. IT IS RECOMMENDED THAT ANGULAR STONE BE USED.
6. PAVED AREAS, FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUBBASE IS COMPLETED, PROVIDED IT IS FREE OF FINE MATERIALS THAT MAY RUNOFF WITH A RAIN EVENT
7. DITCHES, CHANNELS, AND SWALES, FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH A 90% COVER OF HEALTHY VEGETATION, WITH A WELL-GRADED RIPRAP LINING, TURF REINFORCEMENT MAT, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE CHANNEL BANKS, OR DOWN-CUTTING OF THE CHANNEL.

GENERAL NOTES

1. AGGREGATE FOR GRAVEL BASE & SUBBASE

AGGREGATE FOR GRAVEL BASE FOR TYPE A, B & C SHALL BE CRUSHED LEDGE OR GRAVEL OF HARD DURABLE PARTICLES FREE FROM VEGETABLE MATTER, LUMPS OR BALLS OF CLAY AND OTHER DELETERIOUS SUBSTANCES.

AGGREGATE FOR GRAVEL BASE FOR TYPE D SHALL BE SAND OR GRAVEL OF HARD DURABLE PARTICLES FREE FROM VEGETABLE MATTER, LUMPS OR BALLS OF CLAY AND OTHER DELETERIOUS SUBSTANCES.

THE GRADATION OF THE PART THAT PASSES A 3 INCH SIEVE SHALL MEET THE GRADING REQUIREMENTS OF THE FOLLOWING TABLE:

SIEVE DESIGNATION	PERCENTAGE BY WEIGHT PASSING SQUARE MESH SIEVES			
	TYPE A AGGREGATE	TYPE B AGGREGATE	TYPE C AGGREGATE	TYPE D AGGREGATE
6 INCH	---	---	100	---
3 INCH	---	---	90-100	---
2 INCH	---	---	75-100	---
1 INCH	---	---	50-80	---
1/2 INCH	45-70	35-75	30-60	35-80
1/4 INCH	30-55	25-60	---	25-65
No. 4	---	---	15-40	---
No. 40	0-20	0-25	---	0-30
No. 200	0-6.0	0-6.0	0-8.0	0-7.0

TYPE A AGGREGATE SHALL NOT CONTAIN PARTICLES WHICH WILL NOT PASS THE 2 INCH SQUARE MESH SIEVE.

TYPE B & C AGGREGATE SHALL NOT CONTAIN PARTICLES WHICH WILL NOT PASS THE 4 INCH SQUARE MESH SIEVE.

TYPE D AGGREGATE SHALL NOT CONTAIN PARTICLES WHICH WILL NOT PASS THE 6 INCH SQUARE MESH SIEVE.

EACH LAYER AS APPLIED SHALL BE ROLLED WITH A 20 TON ROLLER. THE MATERIAL AS SPREAD SHALL BE WELL MIXED WITH NO POCKETS OF OTHER FINE OR COARSE MATERIAL. OVERSIZED STONES SHALL BE REMOVED FROM THE AGGREGATE.

EACH LAYER OF AGGREGATE SHALL BE PLACED IN 12" MAX. LIFTS OVER THE FULL WIDTH OF THE SECTION. AGGREGATE BASE AND SUB-BASE COURSES MAY BE PLACED UPON FROZEN SURFACES WHEN SUCH SURFACES HAVE BEEN PROPERLY CONSTRUCTED.

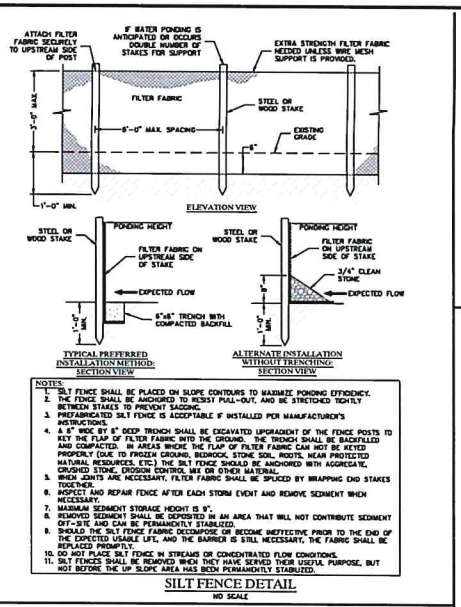
THE SURFACE OF EACH LAYER SHALL BE MAINTAINED DURING COMPACTION OPERATIONS IN SUCH A MANNER THAT A UNIFORM TEXTURE IS PRODUCED AND THE AGGREGATE IS FIRMLY KEYED. THE MOISTURE CONTENT OF THE MATERIAL SHALL BE MAINTAINED AT THE PROPER PERCENTAGE TO ATTAIN THE REQUIRED COMPACTION AND STABILITY. COMPACTION OF EACH LAYER SHALL BE CONTINUED UNTIL DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 "MODIFIED PROCTOR DENSITY" HAS BEEN ACHIEVED FOR THE FULL WIDTH AND DEPTH OF EACH LAYER AS APPLIED.

THE SURFACE TOLERANCE OF EACH BASE COURSE AS APPLIED SHALL BE 3/8 INCHES ABOVE OR BELOW THE REQUIRED TEMPLATE LINES.

2. COMMON BORROW

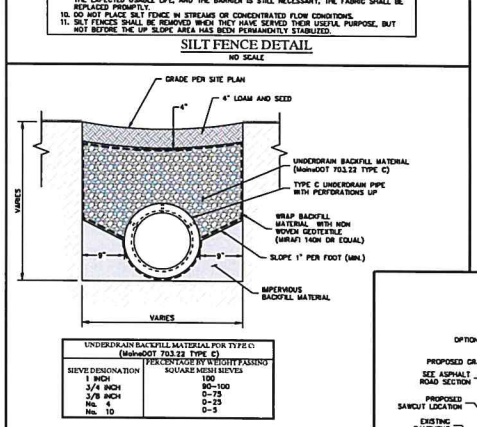
COMMON BORROW SHALL CONSIST OF EARTH, SUITABLE FOR EMBANKMENT CONSTRUCTION. IT SHALL BE FREE FROM FROZEN MATERIAL, PERISHABLE RUBBISH, PEAT AND OTHER OBJECTIONABLE MATERIAL.

THE MOISTURE CONTENT SHALL BE SUFFICIENT TO PROVIDE THE REQUIRED COMPACTION AND STABLE EMBANKMENT. IN NO CASE SHALL THE MOISTURE CONTENT EXCEED 4 PERCENT ABOVE OPTIMUM.



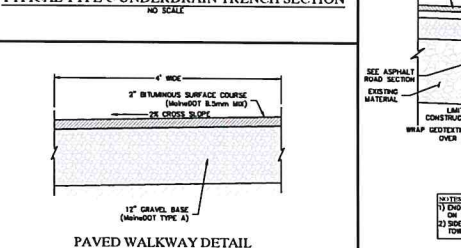
NOTES:
1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. THE FENCE SHALL BE ANCHORED TO RESIST PULL-OUT, AND BE STRETCHED TIGHTLY BETWEEN STAKES TO PREVENT SAGGING.
3. PREFABRICATED SILT FENCE IS ACCEPTABLE IF INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
4. A 6" WIDE BY 6" DEEP TRENCH SHALL BE EXCAVATED UPGRADIENT OF THE FENCE POSTS TO KEY THE FLAP OF FILTER FABRIC INTO THE GROUND. THE TRENCH SHALL BE BACKFILLED AND COMPACTED. IN AREAS WHERE THE FLAP OF FILTER FABRIC CAN NOT BE KEYED PROPERLY (DUE TO FROZEN GROUND, BEDROCK, STONE SOIL, ROOTS, NEAR PROTECTED NATURAL RESOURCES, ETC.) THE SILT FENCE SHOULD BE ANCHORED WITH AGGREGATE, CRUSHED STONE, EROSION CONTROL MIX OR OTHER MATERIAL.
5. WHEN JOINTS ARE NECESSARY, FILTER FABRIC SHALL BE SPLICED BY WRAPPING END STAKES TOGETHER.
6. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
7. MAXIMUM SEDIMENT STORAGE HEIGHT IS 6".
8. REMOVED SEDIMENT SHALL BE DEPOSITED IN AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
9. SHOULD THE SILT FENCE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE, AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
10. DO NOT PLACE SILT FENCE IN STREAMS OR CONCENTRATED FLOW CONDITIONS.
11. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UP SLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

SILT FENCE DETAIL
NO SCALE



NOTE:
1. COMPACT TRENCH BACKFILL IN 8" LIFTS TO AT LEAST 85% OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557 "MODIFIED PROCTOR DENSITY".

STORMWATER TRENCH SECTION
NO SCALE

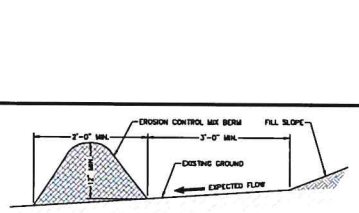


ASPHALT ROAD SECTION
NO SCALE

UNDERDRAIN BACKFILL MATERIAL FOR TYPE C (MaineDOT 703.22 TYPE C)	
SIEVE DESIGNATION	PERCENTAGE BY WEIGHT PASSING SQUARE MESH SIEVES
1 INCH	100
3/4 INCH	90-100
3/8 INCH	0-75
No. 4	0-25
No. 10	0-5

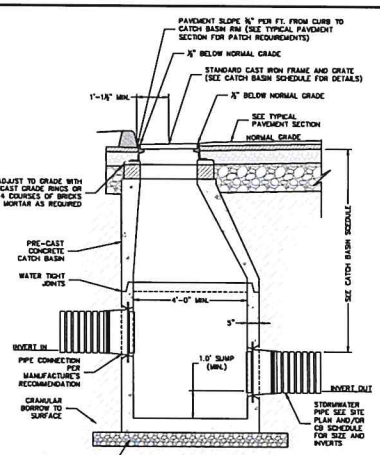
TYPICAL TYPE C UNDERDRAIN TRENCH SECTION
NO SCALE

PAVED WALKWAY DETAIL
NO SCALE

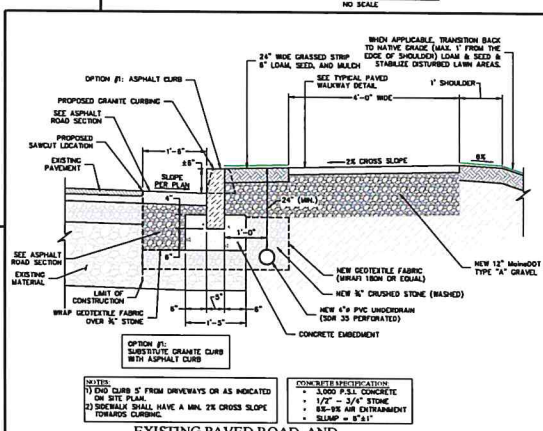


NOTES:
1. THE EROSION CONTROL MIX BERM SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL INCLUDING SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD OR BARK CHIPS, GROUND CONSTRUCTION DEBRIS, REPROCESSED WOOD PRODUCTS, REFUSE, PHYSICAL CONTAMINANTS, OR MATERIALS TOXIC TO PLANT GROWTH ARE NOT ACCEPTABLE.
2. THE MIX SHALL CONFORM TO THE FOLLOWING STANDARDS:
   - A. ORGANIC CONTENT: 80% TO 100% (DRY WEIGHT)
   - B. PARTICLE SIZE BY WEIGHT: 100% PASSING 6" SCREEN, 70%-85% PASSING ¾" SCREEN
   - C. ORGANIC CONTENT SHALL BE FIBROUS AND ELONGATED
   - D. NO STONES LARGER THAN 4" IN DIAMETER
   - E. NO LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS
   - F. SOLUBLE SALTS CONTENT SHALL BE LESS THAN 4.0 mmhos/cm
   - G. pH SHALL BE BETWEEN 5.0 AND 8.0
3. THE COMPOSTED BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.

EROSION CONTROL MIX BERM
NO SCALE



PRECAST CATCH BASIN
NO SCALE



NOTES:
1) END CURB 5' FROM DRIVEWAYS OR AS INDICATED ON SITE PLAN.
2) SIDEWALK SHALL HAVE A MIN. 2% CROSS SLOPE TOWARDS CURBING.

CONCRETE SPECIFICATION
- 3,000 P.S.I. CONCRETE
- 1/2" - 3/4" STONE
- 5%-9% AIR ENTRAINMENT
- SLUMP = 4"±1"

EXISTING PAVED ROAD AND NEW GRANITE CURB SIDEWALK SECTION
NO SCALE

NO.	REVISIONS	DATE

SITE DETAILS

DRAWN BY: MAC
CHECKED BY: ADH
DATE: JANUARY 20, 2021
SCALE:
SHEET TITLE:

CLIENT/PROJECT:
TOWN OF DAMARISCOTTA
VINE STREET DRAINAGE

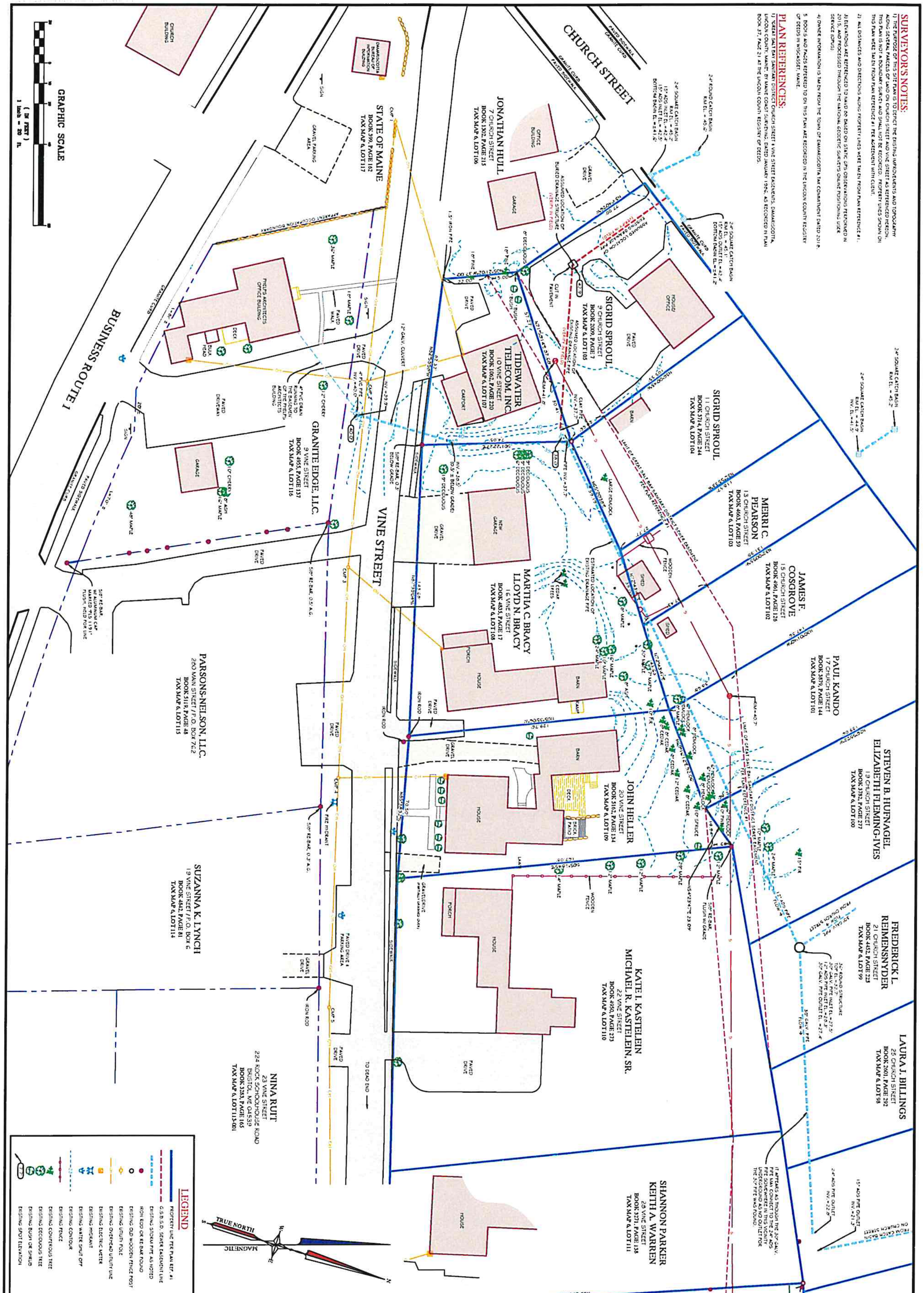
LOCATION: VINE STREET
TOWN: DAMARISCOTTA COUNTY: LINCOLN STATE: MAINE

Gartley & Dorsky ENGINEERING SURVEYING
90 Bayside Drive, Unit 1, P.O. Box 1013, Camden, ME 04843-1013
Ph. (207) 236-4365 Fax (207) 236-3055 Toll Free 1-866-236-4365
165 Main Street Suite 2F, P.O. Box 1072, Damariscotta, Maine 04543
Ph. (207) 790-8626

STATE OF MAINE
ANDREW D. HEDRICK
No. 12658
REGISTERED PROFESSIONAL ENGINEER
12-21

PROJ. NO. 2018-787

C2



THIS PLAN IS PRELIMINARY WITHOUT SIGNATURE	**Gartley & Dorsky** ENGINEERING SURVEYING 59B Union Street P.O. Box 1031 Camden, ME 04843-1031 Ph (207) 236-4365 Fax (207) 236-3055 Toll Free 1-888-282-4365 165 Main Street Suite 2F P.O. Box 1072 Damariscotta, Maine 04543 Ph. (207) 790-5005	CLIENT/PROJECT: **TOWN OF DAMARISCOTTA VINE STREET DRAINAGE** LOCATION: VINE STREET TOWN: DAMARISCOTTA COUNTY: LINCOLN STATE: MAINE	SHEET TITLE: **EXISTING CONDITIONS TOPOGRAPHIC SITE PLAN** SCALE: 1" = 20' DATE: APRIL 25, 2019 DRAWN BY: DAS, JR. CHECKED BY:

STATE OF MAINE DAVID A. STARR, JR. LAND SURVEYOR

PROJ. NO. 2018-787

V2

NO.	REVISIONS	DATE

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

Janet T. Mills
GOVERNOR

Bruce A. Van Note
COMMISSIONER

January 26, 2021

Matt Lutkus
Town Manager
Town of Damariscotta, Maine
21 School Street
Damariscotta, Maine 04543

RE: Damariscotta – Main St. Sidewalk and Bikeway

Dear Mr. Lutkus:

The Maine Department of Transportation (MaineDOT) is pleased to inform you that your community's funding for a pedestrian safety project has been approved, and your community has been selected to receive federal funding assistance at this time for **FACILITY DESIGN and PRELIMINARY RIGHT-OF-WAY** activity on your project.

Your community's project has been included in the MaineDOT 2021-22-23 Capital Work Plan, pending final authorization of federal funds. MaineDOT has currently programmed up to **$48,000.00** in federal highway safety funding for design and construction work on the project, contingent upon the minimum required local match of **$12,000.00**. The funding amounts approved were based on the preliminary estimates for those improvements identified as part what you provided to the Department as part of your application and MaineDOT's internal discussions – though after review, MaineDOT may have adjusted these amounts.

Projects funded for ***Design and ROW Only*** are considered "approved projects," so your community will not need to reapply for construction funding once the project has moved through design and permitting and is ready for construction. However, future funding for construction will be contingent upon:

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

Janet T. Mills
GOVERNOR

Bruce A. Van Note
COMMISSIONER

1. your community moving the project expeditiously through the design process
2. the availability of future federal and/or state funding

AND

3. documented commitment to your minimum required local match for the construction costs

Currently, MaineDOT plans to manage this project. Please confirm that your municipality would like MaineDOT to administer the project for the Municipality. Requirements for federally funded locally administered projects may be found on the MaineDOT website: **http://www.maine.gov/mdot/lpa/**. Please keep in mind that MaineDOT staff time required to review project plans is part of the costs that will come out of the project funding. Furthermore, please note that funding for this project, including future construction funds, is contingent upon MaineDOT receiving adequate federal funding to support it, and MaineDOT reserves the right to withdraw funds from this project for any reason.

I would like to emphasize that your municipality should not authorize any engineering work or expend any funds on this project (including local match funding) before receiving notice that funds are authorized, and you have signed a ***Local Project Agreement*** with the MaineDOT. All expenditures made before an agreement is in place and MaineDOT issues a written ***Notice to Proceed***, are *ineligible* for reimbursement. **Dan Loring** has been assigned by MaineDOT as the project manager from the Department's Multimodal Program. He can be reached at **(207) 624-3451** and his email is **Daniel.M.Loring@maine.gov**. Please call your project manager if you have any questions regarding this project and the next steps in this process.

The following information details your project's estimated funding amounts and the specific information and project details we have within our system. Please review and verify the following information:

Project Name:	**Damariscotta – Main St. Sidewalk and Bikeway**
Project Identification Number:	(WIN) 25337.00
Project Manager:	Dan Loring
Contact Information:	(207) 624-3612 Daniel.M.Loring@maine.gov
Proposed Scope:	Pedestrian sidewalk safety and ADA improvements
Description:	Facility Design and Preliminary Right-of-Way to develop approximately 1,900 linear feet of sidewalk and bikeway along Main St. from Biscay Rd. to the Great Salt Bay School including pedestrian activated crosswalk lights.
Estimated Total Project Cost:	$ 60,000.00
Federal funding amount approved in the Work Plan:	$48,000.00
Local Match amount required for Federal funding Amount:	$ 12,000.00
Projected Additional Funding Needed for Construction:	$804,370.00

We share your desire to move your project into design and/or construction as soon as possible. We are proud of our partnership with your community to improve the safety and services offered through this pedestrian safety project. We appreciate your efforts and the hard work you have invested to move this project forward.

Please sign below on the last page to confirm your municipality still wants to design and/or construct this project and to re-certify that your local match has been officially obligated to the project.

Keeping one copy for your records, return the other original **within 30 days** to my address below:

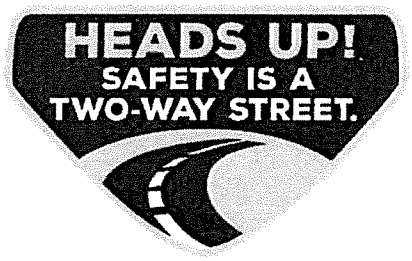
1) This original signed letter

2) Appropriate documentation authorizing the local match

3) Your project administration preference

Please call me at **(207) 624-3311** with any questions or to review any issues related to the project that you would like to discuss. Thank you very much for your continued efforts to improve the transportation system within your community. I look forward to talking with you soon.

Sincerely,



Patrick D. Adams
MaineDOT Active Transportation Planner
Maine Department of Transportation
16 State House Station
Augusta, Maine 04333
(207) 624-3311
patrick.adams@maine.gov

Project Name: Damariscotta – Main St. Sidewalk and Bikeway

Project Identification Number: (WIN) 25337.00

Project Manager: Dan Loring

Contact Information: (207) 624-3612 Daniel.M.Loring@maine.gov

Proposed Scope: Pedestrian sidewalk safety and ADA improvements

Description: Facility Design and Preliminary Right-of-Way to develop approximately 1,900 linear feet of sidewalk and bikeway along Main St. from Biscay Rd. to the Great Salt Bay School including pedestrian activated crosswalk lights.

Estimated Total Project Cost: $ 60,000.00

Federal funding amount approved in the Work Plan: $48,000.00

Local Match amount required for Federal funding Amount: $ 12,000.00

Projected Additional Funding Needed for Construction: $804,370.00

Municipality: _____

Authorized Signature: _____

Title: _____

Date: _____

Prefer: ☐ **Locally Administered Project**

☐ **MaineDOT Considers Administering the Project**

Description of Local Match commitment including the source, approval date, etc. (*Please also attach supportive documentation*):