CHAUTAUQUA COUNTY DEPARTMENT OF FINANCE PURCHASING

INVITATION FOR BID

BID NO. PW-1-21 DART
DUNKIRK AIRPORT HANGAR 3 – NEW BUILDING

Bid Issue Date:	August 20, 2021
PreBid Meeting	August 30, 2021
Questions Received Up to Date and Time:	September 10 , 2021
Bids Open at 2:00 p.m. On:	

RESPOND TO:

Becky Anderson, Purchasing Agent
Email: andersob@chqgov.com
PH. 716-753-4918

Plans and Specifications Provided By:
Labella Associates
500 East Sixth St.
Jamestown, NY 14701
Ron Kessler
RKessler@LaBellaPC.Com

Paul M. Wendel, Jr.
County Executive

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NOTICE TO BIDDERS
Advertisement Date: Aug. 20, 2021

Chautauqua County Department of Finance will receive sealed bids for a Chautauqua County Dunkirk Airport Hangar 3 Reconstruction, Invitation for Bid No. PW-3-21 DART. Such sealed bids must be filed with the Chautauqua County Purchasing Division of Finance located at 3 North Erie Street, Mayville, NY 14757. Bids must be received by the County's Purchasing Office no later than 2:00 P.M. on September XX, 2021, at which time they will be publicly opened and read. If delivering bids in person, please allow ample time to pass through building security. Each bid envelope must be plainly marked with the proposal number and the item bid therein.

Specifications, Instructions to Bidders, Non-Collusive Bidding Certification and Affidavits are available at the Office of the Purchasing Manager, Department of Finance, Gerace Office Building, 3 North Erie Street, Mayville, New York 14783. This Notice will be posted on www.empirestatebidsystem.com. Bid documents may be request by emailing andersob@chqgov.com. Bid documents may also be seen on The Builders Exchange of the Southern Tier, Inc. – West website: https://bxstier.com

NOTE: Chautauqua County is not responsible for the completeness or accuracy of ITB documents received from any other source, and the successful bidder shall be subject to official County ITB terms and conditions.

Any vendor submitting a bid based on incomplete or inaccurate information resulting from documentation received from any third party, shall not have cause for relief from award or completion of a contract in accordance with the official documents on file with the Chautauqua County Purchasing Division.

EACH BID ENVELOPE MUST BE PLAINLY MARKED WITH THE BID NUMBER AND THE ITEM BID THEREIN.

Chautauqua County reserves the right to accept or reject any and all bids, to waive any inconsistencies in, or to accept the bid deemed most advantageous to the County.

Becky Anderson
Purchasing Agent

Invitation for Bid No. PW-1-21 DART
Bids Due: September XX, 2021
At
Chautauqua County Department of Finance
3 North Erie St., Mayville, 14757
2:00 PM

THE FOLLOWING FORMS MUST BE SUBMITTED

BID FORM
NON-COLLUSION BIDDING CERTIFICATION
AFFIDAVIT'S
ACKNOWLEDGEMENT'S

By submission of this bid, the bidder and each person signing on behalf of the bidder certifies that they have read and adhere to all the terms and conditions as proposed in the attached Invitation for Bid Number PW-1-21 DART and any addendums received for the Dunkirk Airport Hangar 3 Reconstruction.

Submittal Page:

COMPANY NAME_____

SIGNED_____

PRINT NAME OF SIGNER_____

TITLE_____

E-MAIL_____

FEDERAL ID NO._____

ATTENTION BIDDERS – BID RESPONSE FORM

Please indicate your response below as to whether you are interested in bidding this particular project ***(or)*** not by returning **this form to the Purchasing Department by emailing to: andersob@chqgov.com.**

Bid Number:	PW-1-21 DART
Name of Project being bid:	Dunkirk Airport Hangar 3 - New Building

If you plan on submitting a bid for this project please indicate by writing an "X" in this line _____ and submitting this form to the above referenced email so we can send you a Zoom invite for the bid opening.

_____ WE ARE INTERESTED IN BIDDING THIS SOLICITATION. Please forward all addendums and any information pertaining to this to the contact/email address below:

VENDOR NAME: _____

COMPANY: _____

ADDRESS: _____

_____

PHONE:_____/Email: _____

_____WE ARE NOT INTERESTED BECAUSE:
For purposes of facilitating your firm's response to our invitation to bid, the County of Chautauqua is interested in hearing reasons for your not wishing to be on the bid list.

_____ Service requested is not provided by our Company.

_____ Services and/or materials do not meet your specifications.

_____ Specifications are not clearly understood or applicable _____too vague _____ too rigid.

_____ Job/Project is too small

_____ Insurance Requirement

_____ Other reason not listed above (or) elaborate on the checked marked reason above:

_____ Please remove my company from your bidders list for this project.

CHAUTAUQUA COUNTY
RESPONSE CHECKLIST - ITB NO. PW-1– 21 DART

Please note below a list of documents which must be submitted in full as part of this bid. Failure to submit any of the documents as part of your bid or failure to acknowledge any addendum in writing with your bid may be cause for rejection of the bid. **This is a multiple prime contract. Please indicate which prime contract you are bidding. Separate bids must be submitted if bidding multiple contracts (circle as appropriate):**

General Electrical Plumbing HVAC

Please check each item indicating your compliance:

THIS CHECKLIST MUST BE SUBMITTEDAS PART OF YOUR BID.

_____RESPONSE CHECKLIST

_____NON-COLLUSION CERTIFICATE

_____IRANIAN DIVESTMENT CERTIFICATE

_____FINANCIAL AFFIDAVIT

_____ AFFIDAVIT OF A FOREIGN CORPORATION

_____CORPORATE ACKNOWLEDGEMENT CERTIFICATE

_____EXCLUSION CHECK

_____BID FORM

_____ AAP19LL MWBE Schedule of Utilization

_____ADDENDUM(S) ACKNOWLEDGE (IF APPLICABLE)

_____INSURANCE CERTIFICATES

COMPANY	TELEPHONE NUMBER
ADDRESS	EMAIL ADDRESS
AUTHORIZED REPRESENTATIVE (PRINT)	TITLE
AUTHORIZED SIGNATURE	DATE

BID FORM

BID NUMBER: PW-1-21 DART
Dunkirk Airport Hangar 3 Reconstruction

Bid Date: September XX, 2021

Pursuant to, and in compliance with, Chautauqua County Invitation for Bidders and all of the Bid Documents, including any Addenda issued by the Purchasing Manager and/or Agent to the undersigned prior to the opening of Bids, received by the undersigned, we "the Bidder" _____ hereby propose to furnish all labor, supplies, materials and equipment incidental to and in strict accord with the applicable provisions of the Drawings and Specifications entitled **"Dunkirk Hangar 3 Reconstruction"** all to the satisfaction and approval of the Architect/Engineer and the Owner in accordance with the terms and conditions of the Contract Documents for the following firm fixed amount:

Contract Section	Bid
General Construction Contract (Per Specification 01 12 00 Section 1.7)	
Mechanical Contract (Specification 01 12 00 Section 1.8)	
Plumbing Contract (Specification 01 12 00 Section 1.9)	
Electrical Contract (Specification 01 12 00 Section 1.10)	
Alternates	**Bid**
GC Contract - Alternate No. 01 – Add Plywood Liner Panel (Spec. 01 23 00 Section 1.05A	
GC Contract – Alternate No. 02 – Add interior partitions and associated finishes (Specification 01 23 00 Section 1.05B)	
Electrical Contract – Alternate No. 2 - Add electrical circuits branch circuits for interior build-out; office room 2, Room 5 and Restroom 6.	
Plumbing Contract - Alternate No. 2 - Add plumbing fittings/fixtures for interior build-out; Office room 2, Room 5 and Restroom 6.	
Mechanical Contract - Alternate No. 2 - Add mechanical systems/components for interior build-out; Office room 2, Room 5 and Restroom 6.	

A. Attached hereto is a Bid Bond in the amount of ten percent (10 %) of the Base Bid.

B. It is agreed by the undersigned that after receipt of a Notice of Award and a consummation of an Agreement in accord with the terms of the Agreement Documents, he or she will start work immediately upon execution of the contract drafted by the Chautauqua County Law Department.

Respectfully submitted:

Company Name:	
Address:	
Representative:	
Phone:	
Fax:	

NON-COLLUSION BIDDING CERTIFICATION

By submission of this bid, the bidder and each person signing on behalf of the bidder certifies, subject to the terms of Section 103-d of the General Municipal Law, as amended, and under penalty of perjury, that to the best of its knowledge and belief:

(a) The prices in this bid have been arrived at independently without collusion, consultation, communication or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

(b) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly being disclosed by the bidder prior to the opening, directly or indirectly, to any other bidder or to any competitor; and

(c) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(d) The person signing this bid or bid certifies that he or she has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury affirms the truth hereof, such penalties being applicable to the bidder as well as to the person signing in its behalf.

Signature _____

Title _____

STATE OF NEW YORK)

COUNTY OF) SS:

On this _____ day of _____, 2021, before me

personally appeared _____, to me known, who being

by me duly sworn, did depose and say that he resides at _____

_____, New York: that he or she is the _____

of _____, the corporation described in and which executed the within instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of said corporation.

_____
Notary Public

AFFIDAVIT OF FINANCIAL RECORDS

STATE OF _____ AFFIDAVIT

ss: (corporate)

COUNTY OF_____

_____, being duly sworn, deposes and says

that I have made a complete and thorough examination of the financial records of said firm; and that I have determined that said firm is currently not in arrears in taxes or upon dept or contract to or with the county of Chautauqua, that said firm has not defaulted as surety or otherwise upon a contract or obligation to the County of Chautauqua, and that said firm is not disqualified to bid upon municipal or state contracts under any act of New York State Legislature.

_____

Sworn to before this _____

Day of _____, 2021

_____

NOTARY PUBLIC

Individual, Corporation, Partnership, or LLC Acknowledge

STATE OF }
SS.:
COUNTY OF }

On the day_____of _____in the year 20___, before me personally appeared_____known to me to be the person who executed the foregoing instrument, who, being duly sworn by me did depose and say that __he resides_____,

Town of_____,

County of_____,

State of_____,

[Mark an **X** in the appropriate box and complete the accompanying statement.]

□ (If an individual): __he executed the foregoing instrument in his/her name and on his/her own behalf.
□ (If a corporation):__he is the_____ of_____, the corporation described in said instrument; that, by authority of the Board of Directors of said corporation, __he is authorized to execute the foregoing instrument on behalf of the corporation for purposes set forth therein; and that, pursuant to that authority, __he executed the foregoing instrument in the name of and on behalf of said corporation as the act and deed of said corporation.
□ (If a partnership):__he is the_____of_____, the partnership described in said instrument; that, by the terms of said partnership __he is authorized to execute the foregoing instrument on behalf of the partnership for purposes set forth therein; and that, pursuant to that authority, __he executed the foregoing instrument in the name of and on behalf of said partnership as the act and deed of said partnership.
□ (If a limited liability company):__he is a duly authorized member of_____ LLC, the limited liability company described in said instrument; that __he is authorized to execute the foregoing instrument on behalf of the limited liability company for purposes set forth therein; and that, pursuant to that authority, __he executed the foregoing instrument in the name of and on behalf of said limited liability company as the act and deed of said limited liability company. _____

_____
Notary Public
Registration No.

AFFIDAVIT OF FOREIGN CORPORATION

STATE OF)
COUNTY OF) ss:

I, ,as of , Inc., a corporation,

incorporated under the laws of ,

authorized to do business in New York, do hereby certify and affirm that , Inc., has complied with Article 13 of the Business Corporations Law of the State of New York.

As proof I submit a copy of:

_____ A receipt of filing an application to do business in New York Secretary of State; or

_____ A copy of our application for authority to do business in New York filed with the Secretary of State on , 20 .

As said corporation has complied with Article 13 of the Business Corporations Law of the State of New York, I hereby swear and affirm that
, Inc., is authorized to do business in the State of New York.

Under penalties of perjury, I declare that the facts presented are true, correct and complete.

In witness whereof, I set my hand and attach the corporate seal this day of , 2021.

_____
Title

Business Corporation Law of New York, Section 102 (7):

"Foreign Corporation" means a corporation ... formed under laws other than the statutes of (New York) ... "Authorized," when used with respect to a foreign corporation, means having authority, under Article 13 (Business Corporation Law) to do business in this state.

IRANIAN DIVESTMENT CERTIFICATE
Certification Pursuant to Section 103-g
Of the New York State
General Municipal Law

A. By submission of this bid/bid, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law. Such list can be found on the website of the office of general services, http://ogs.ny.gov/default.asp."

Date: _____

Company Name: _____

Signature: _____

Title: _____

On January 13, 2012, Chapter 1 of the Laws of New York for 2012 was signed into law by Governor Andrew M. Cuomo. The law is known as the "Iran Divestment Act of 2012" (the "Act") and can be found at § 165-aof the NY State Finance Law. The Act became effective on April 12, 2012. The Act imposes limitations on "persons" that are determined to be engaged in investment activities in the Iranian energy sector, as defined in the Act.

On July 17, 2012, Governor Cuomo signed into law Chapter 106 of the laws of 2012, which extended the Iran Divestment Act to State and local public authorities, the State University of New York, and the City University of New York.

EXCLUSION CHECKS CERTIFICATE

Chautauqua County reserves the right to conduct exclusion checks on those who respond to its solicitations and on those with whom it contracts to verify that the contractor and its employees, subcontractors, and agents have not been sanctioned, excluded, debarred, suspended, or the subject of adverse governmental action by law enforcement, regulatory authorities, or licensing entities. This may include a check for exclusion from Federal healthcare programs. By submitting this proposal, you are: certifying that you are not prohibited from providing these services and/or goods as a result of being sanctioned, debarred, suspended, or excluded; agreeing that the County has the right to decline to enter into a contract with you in the event the County finds there to be a legal or funding source impediment to contracting with you; agreeing to provide written notice to the County immediately upon the occurrence of any sanction, exclusion, debarment, or suspension relating to your contract with the County; and agreeing that upon the occurrence of any such sanction, exclusion, debarment, or suspension, the County has the right to declare its contract with you to be terminated effective as of the moment of such occurrence or at such later date as is deemed by the County to be in the best interest of the County.

_____
Name of Business

_____
Authorized Signature

_____
Printed Name

_____
Date

MWBE SCHEDULE OF UTILIZATION
Part 1 - MBE Utilization

Contract No.	PIN	Project Sponsor	
K007327	5905.94	Chautauqua County	
County(ies):			
___X_ Initial	**_____ Amendment**	**Contractor Name**	
Contract Bid Amount:			
Contract MBE Goal %:	9%	**Contractor Fed ID No.**	
Contract MBE Goal $:			

UTILIZATION INFORMATION			
MBE Name	**Fed ID No.**	**Work Category**	**MBE Utilization**
		Total Commitments:	
		Contract MBE Goal:	
		Difference:	

TO BE COMPLETED BY PROJECT SPONSOR			
The Bidder_____has_____has not demonstrated good faith efforts to secure MBE utilization in satisfaction of the contract goal as required by the contract specification.			
Signature		**Date**	

MWBE SCHEDULE OF UTILIZATION
Part 2 - WBE Utilization

Contract No.	PIN	Project Sponsor	[redacted]
K0073627	5905.94	Chautauqua County	
County(ies):			
_____ Initial	**_____ Amendment**	**Contractor Name**	
Contract Bid Amount:			
Contract WBE Goal %:	10%	**Contractor Fed ID No.**	
Contract WBE Goal $:			

UTILIZATION INFORMATION			
WBE Name	**Fed ID No.**	**Work Category**	**WBE Utilization**
		Total Commitments:	
		Contract WBE Goal:	
		Difference:	

TO BE COMPLETED BY PROJECT SPONSOR			
The Bidder_____has_____has not demonstrated good faith efforts to secure WBE utilization in satisfaction of the contract goal as required by the contract specification.			
Signature		**Date**	

INSTRUCTIONS - AAP 19LL NYS

Contract No: Enter the Sponsor's contract number.

PIN: Enter the Project Identification Number.

Project Sponsor: Enter the name of the Sponsor who released the contract (e.g., Albany County).

County(ies): Enter the name(s) of the county(ies) where the contract is located (e.g., Albany County).

Initial: Place a check mark if this is the initial schedule for contract award.

Amendment: Place a check mark if this is a schedule amending utilization after contract award.

Contractor Name: Enter the business name for the prime contracting firm.

Contractor Fed ID No: Enter the Federal Identification number associated with the prime contracting firm.

Contract Bid Amount: Enter the contract's low bid amount in US dollars.

Contract MBE or WBE Goal %: Enter the MBE or WBE goal that is assigned to this contract, expressed as a percentage.

Contract MBE or WBE Goal $: The MBE or WBE goal will be expressed in US dollars; *Excel will calcuate and fill automatically.*

UTILIZATION INFORMATION SECTION

MBE or WBE Name: Enter the business name for the MBE or WBE firm.

Fed ID No: Enter the Federal Identification number associated with the MBE or WBE firm.

Work Category: This field has a drop down menu; select one category from the list.

WBE Utilization: Enter the total amount of the work assigned to the MBE or WBE in US dollars.

Total Commitments: The MBE or WBE total utilization will be expressed in US dollars; *Excel will calcuate and fill automatically.*

Contract MBE or WBE Goal: The MBE or WBE goal will be expressed in US dollars; *Excel will copy from above section and fill automatically.*

Difference: The difference between utilization and the goal expressed in US dollars; *Excel will calcuate and fill automatically.*

INSTRUCTIONS TO BIDDERS

Enclosed with these Instructions are:

(a) A Copy of the Public Notice identifying goods and/ or services being sought and specifying the date, time and location of receipt and examination of bids by Chautauqua County;
(b) Specification(s) for item(s) on which bids are being solicited; and
(c) Non-Collusion Bidding Certification, Bid Response Form, Bid Form, (as applicable), Corporate Affidavit, Affidavit of Financial Records, and Iranian Divestment Certification Pursuant to Section 103-g, all of which must be completed and returned with each bid submitted. Product Data Sheets may also be submitted when applicable.

1. A prebid conference will be held for this project on August 30, 2021 at 10:00 AM in the Dunkirk Airport FBO Building to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield construction requirements. Interested bidders may also view the project site at that time.

2. Bidders are responsible for submitting their bids to the appropriate location at or prior to the date and time set forth in County's bid documents. **No bids will be accepted after the designated date and time.** Delay in mail delivery is not an exception to this rule. **BIDS WILL NOT BE ACCEPTED VIA FACSIMILE OR E-MAIL.** Bids which are not timely submitted will be returned unopened.

3. **ADDENDUMS/MODIFICATIONS:** Questions must be submitted by ***September 10, 2021*** as specified on the front sheet of this invitation to bid. All questions must be sent to the Purchasing Manager or Agent. The questions will be forwarded to the department or Engineering Firm for clarification. The clarifications shall be sent via email to all plan holders and posted on Bidnet. The Engineering firm may disperse clarifications on behalf of the Purchasing Manager or Agent.

   • **"From the time of issuance of a County Invitation for Bid until final determination of the successful vendor, all prospective vendor questions and communications shall be directed to the Purchasing Manager and/or agent. Contacting any other County employee prior to County's issuance of a bid award may result in rejection of a bid."**

4. Bids must be submitted in a sealed envelope plainly marked with the title of the bid and the bid number. Bidder's name and complete mailing address must be included on the outside of the envelope.

Purchasing Manager and/or Agent in Charge:	Becky Anderson, Purchasing Agent
Bid Title:	Dunkirk Hangar 3 Reconstruction
IFB No.	PW-1-21 DART

5. As set forth in General Municipal Law §109, bid awards may not be assigned, transferred, conveyed, sublet or otherwise disposed of without County's express written consent.

6. Please complete the Bid Response form and email to andersob@chqgov.com. Chautauqua County encourages all qualified applicants, including Minority-owned Business Enterprises, Women-owned Business Enterprises, Small Business Enterprises and Disadvantaged Business Enterprises, to partake in the bidding of this and all other commodities. The successful Bidder must be an EOE.

7. Chautauqua County is exempt from all Federal and State taxes.

8. By submitting a bid, you are asking the county of Chautauqua to accept your offer for the sale of goods or services. It is important that you READ and UNDERSTAND all terms and conditions herein as well as understand the laws that govern Municipal Purchasing which can be found at http://public.leginfo.state.ny.us.

9. The enclosed bid forms must be used and may not be substituted amended, or altered. Bids submitted that are not on the enclosed forms will not be considered. All bid documents must be submitted for each bid, and must be signed by an authorized individual. Documents with a place for a notary signature must be notarized. Copies of bid documents obtained from any other source are not official copies.

10. **Bid Guaranty:** Where applicably indicated, each Proposal must be accompanied by a bid guaranty which shall not be less than ten percent (10%) of the total base bid amount. The guaranty may be a certified check, bank draft, or standard form Irrevocable Letter of Credit. If the specified form of bid guaranty is a Bid Bond, such Bond shall be secured by a guaranty or surety company authorized to do business in the State of New York as a surety. Proposals received without the specified guaranty may be deemed non-responsive. Certified check or bank draft must be payable to the order of "Chautauqua County Director of Finance." Cash deposits will not be accepted. The bid guaranty shall insure the execution of the Agreement and the furnishing of the surety bond or bonds and insurance by the successful Contractor, all as required by the Contract Documents.

    Bid guaranties in the form of certified check, bank draft or letter of credit will be returned to bidders other than the successful Contractor within ten (10) days after the contract is awarded. The bid guaranty of the successful Contractor will be returned upon execution of the Contract and submission of required bonds and insurance.

11. **Contract Term:**

a.) The contract will be for a one (1)year period, commencing October 15, 2021 and ending October 15, 2022.

b.) Chautauqua County reserves the right to terminate this contract at any time for any reason in whole or in part upon thirty (30) days' written notice to the successful Contractor. The County also reserves the right to cancel the contract immediately for breach or non-performance.

12. **Withdrawal of Bids:** Negligence on the part of the Bidder in preparing his bid confers no right for the withdrawal of the bid after it has been opened. Any Bidder, upon his properly notarized written request, will be given permission to withdraw his bid not later than the time set for opening. At the time of opening of the bids, when such bid is included, it will be returned to the Bidder unopened.

Pursuant to General Municipal Law, Section 105, Contractor may not withdraw its bid within Sixty (60) days after the bid opening.

12. **Execution of Agreement:**

a. The Bidder, whose proposal has been accepted, shall have a legally authorized representative execute the Agreement and submit it to the County Legal department as directed as such Department.

b. In addition, the successful Bidder, within the period stipulated in the Notice of Award, shall procure, execute, and deliver to the County and maintain, at its own cost and expense, until the Final Completion date of the work covered by this Agreement, proof of insurance as required on the attached Appendix "C", and a performance and payment bonds submitted by a surety company authorized to do business in the State of New York as a Surety:

- Chautauqua County requires the bonds and insurance prior to execution of the Agreement. These documents will be considered as part of the final contract.

- ***Please note that contracts $10,000.00 or less are not subject to performance and payment bonds.***

- Contractor shall not perform any work pursuant to the Agreement, and shall not be entitled to any payment under the Agreement, unless and until County is in possession of all requested Bond Certificates.

(1) Performance Bond - in an amount not less than one-hundred percent (100%) of the total amount payable to the Contractor by the terms of the contract.
(2) Labor and Material Bond - in an amount not less than one hundred percent (100%) of the total amount payable to the Contractor by the terms of the contract.

13. Funding for this project is provided, in part, by a NY State Department of Transportation Aviation Project Funding Grant. Award of construction contracts is subject to terms of the NYS Aviation Project Funding Agreement Project Identification Number 5905.94. Terms of the Project Grant establish both Equal Employment Opportunity Goals and Minority and Women Business Enterprise contract/subcontract goals. These goals are set forth in Exhibits 2 and 3 of this solicitation and compliance guidance is enumerated in NYSDOT's Standard Specifications Section 102-12:

https://www.dot.ny.gov/main/business-center/engineering/specifications/english-spec-repository/2020_9_specs_usc_tc_vol1.pdf.

- **M/WBE contract/subcontract goals for this RFP are as follows**:

9% Minority Business Enterprise Participation
10% Women's Business Enterprise Participation

- **Applicable EEO participation goals for this RFP are:**

6.3% minority employment
6.9% women employment opportunity (EEO) participation requirements and Minority/Women Business Enterprise (M/WBE) contract goals.

Responsive bidders shall include with their bid, proposed subcontractors/suppliers/vendors intended to satisfy MWBE requirements or provide documentation of Good Faith Effort to support a waiver of MWBE goals. NYS Worksheet AAP 19LL or equivalent may be used to convey MWBE subcontracting plans. Additional requirements pertaining to EEO and MWBE utilization are provided in Division 00 Specifications included in this solicitation and incorporated in the contract.

SECTION 00 - **GENERAL PROVISIONS**

GENERAL CONDITIONS OF THE CONTRACT

Terms and Conditions provided by Chautauqua County and additional terms and conditions inserted from NYS DOT STANDARD SPECIFICATIONS, Volume 1, Section 1 – January 1, 2020
Additional information may be found at
https://www.dot.ny.gov/main/business-center/engineering/specifications/english-spec-repository/2020_1_specs_usc_tc_vol1.pdf

INTRODUCTION

The purpose of the "General Conditions of the Contract" is to set forth the general manner in which Owner, Contractor, and Consultant will perform under the Agreement. The provisions of the "Supplementary General Conditions" may modify specific requirements of these General Conditions.

DEFINITIONS

a. "Agreement" or "The Agreement" means the contract executed by Contractor and Owner, including amendments and change orders executed by both parties.

b. "Consultant" means a professional designated by Owner as Owner's consultant, which may be an engineering, architect, landscape architect, or surveyor firm.

c. "Contract Documents" means documents defined as such in the Agreement, and includes without limitation the Agreement, the Notice to Bidders, Instructions to Bidders, Contractor's bid, the bid guaranty, bid bonds, General Conditions, Special Conditions, Drawings and Specifications, and all modifications thereof.

d. Contractor" means the bidder which is awarded the Agreement.

e. "Owner" or "County" means the County of Chautauqua.

f. "Project" means all items encompassed by Owner's bid package and the Contract Documents, including items in Contractor's Agreement, items in the agreements of other contractors, and items to be addressed by Owner, utility companies, and others.

g. "Work" or "The Work" means all labor, materials, equipment, and other incidentals and things to be done, furnished, or performed by Contractor to construct the Project, pursuant to and in accordance with its Agreement.

INTENT OF DOCUMENTS AND INSTRUCTIONS

a. The Specifications, Drawings, and any instructions set forth in the bid package are complementary. They are intended to provide for and include everything necessary for the proper and orderly execution and completion of the Project. Any Work shown in the bid documents for which there are no particular specifications, or the omission from bid Drawings and/or bid Specifications of express reference to any work which obviously was intended to be included in the Project, shall not excuse or relieve Contractor from furnishing the same. Work or materials described in words which have a

generally accepted technical or trade meaning, shall be interpreted by such customary and recognized standard of meaning.

b. Wherever the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used in the Specifications or on the Drawings, it shall be understood that the direction, requirement, permission, order, designation, and prescription of Owner is intended. Similarly, the words "approved," "acceptable," "satisfactory," and words of like import shall mean approved by, acceptable to, and satisfactory to Owner, unless otherwise expressly stated.

c. References herein to Contractor's employees shall be deemed to mean any person working on the Project who is under Contractor's or its subcontractor's direction and control, or who receives compensation from Contractor.

d. Written notice shall be deemed to have been given: upon receipt, if delivered in person to the individual or to a member of the firm, or to an officer of the corporation, for which it is intended; on the third day after mailing if sent by first-class mail; upon delivery, if sent by overnight delivery; on the next business day, if sent via facsimile; or upon receipt of a "delivery receipt," if sent via e-mail. Notices which are sent via mail shall be sent to the address listed on the first page of the Agreement, or to such alternate address as the recipient has specified in writing. Notices sent via facsimile or e-mail shall be sent to such address as the recipient specifies, in writing.

e. All time limits stated in the Contract Documents are of the essence.

f. All directives to Contractor shall be issued by the Project Architect unless otherwise specified in the bid documents, or in writing by Owner. All Contractor technical inquiries shall be directed to the Architect.

CONTRACT DRAWINGS AND TECHNICAL SPECIFICATIONS

a. Contractor will be furnished, without charge, five sets of Contract Drawings, and five sets of Technical Specifications. County will provide such documents either on compact disk or in paper form. Additional sets of documents will be furnished, upon Contractor's request, at cost.

b. All deviations from the Drawings and Specifications proposed by Contractor, whether prior to or during construction, shall require Owner's and Architect's written approval. Contractor's written deviation request shall be accompanied by complete drawings, details, and specifications covering the proposed Work, all prepared under the supervision of a professional engineer or architect licensed by the State of New York and subject to the approval of Owner, at Contractor's expense.

ADMINISTRATIVE PROVISIONS

INSURANCE

Contractor shall furnish the insurance as described in the Agreement. Within ten (10) calendar days of the Notice of Award and prior to the commencement of any work under the Agreement, Contractor shall furnish to Owner a certificate or certificates of insurance in a form satisfactory to the Chautauqua County Insurance Department, which certificate or certificates evidence the existence of the required insurance coverage, that Owner has been named as an additional insured and that the certificates provide that Owner be given at least thirty (30) days' notice of any intent to cancel coverage. Failure to supply a satisfactory certificate within ten (10) calendar days after the date of the Notice of Award may result in cancellation of award and forfeiture of CONTRACTOR'S bid security, in the sole discretion of Owner.

ROYALTIES AND PATENTS

Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringement of any patent or other intellectual property rights, and shall indemnify and hold Owner harmless from loss on account thereof.

PERMITS AND LAWS

Contractor shall comply with all Federal, State, and Local Laws, regulations and ordinances affecting the Work, and shall give proper public authorities all requisite notice in connection with the Work. Contractor shall, at its own expense, obtain and pay for all necessary licenses, permits, and other needed approvals, authorizations, or permissions, unless otherwise stated in the bid Special Conditions. Contractor shall be solely responsible for any damage resulting from its neglect to obey a law, regulation, rule, requirement, or ordinance. In the event Contractor performs Work called for by Contract Documents, knowing it to be contrary to a law, regulation, rule, requirement, or ordinance, it shall bear all costs, expenses, and damages arising therefrom.

Contractor shall comply with the United States Department of Labor safety and health regulations for construction, as applicable, promulgated under the Occupational Safety and Health Act of 1970 (29 USC 651 et. seq.) and under the Contract Work Hours and Safety Standards Act (40 USC 3701 et. seq., and 29 CFR Part 5), as amended. Nothing in the Act shall be construed to supersede or in any manner affect any worker's compensation law or to enlarge or diminish or affect in any manner the common law or statutory rights, duties, or liabilities of employers and employees under any law with respect to injuries, diseases, or death of employees arising out of, or in the course of, employment.

ASSIGNMENT

Contractor shall not assign any monies due to it hereunder, without the prior written consent of Owner.

TITLE TO PROJECT MATERIALS

a. Title to all materials to be sold by Contractor to Owner pursuant to the Agreement shall immediately vest in and become the sole property of Owner upon delivery of such materials to the site. Notwithstanding such transfer of title, Contractor shall have the sole continuing responsibility to install such materials, protect them, maintain them in proper condition and forthwith repair, replace and make good any damage thereto without cost to Owner, until such time as the Work is fully accepted by Owner. Such transfer of title shall in no way affect any of Contractor's obligations under the Agreement. In the event that, after title to materials has passed to Owner, any such materials are rejected as being defective or otherwise unsatisfactory, Contractor shall promptly replace the defective or unsatisfactory materials with acceptable materials, at no additional cost to Owner.

b. Contractor shall, upon Owner's request, furnish to Owner such bills of sale and other instruments as may be requested by Owner, properly executed, acknowledged, and delivered, assuring to Owner unencumbered title to materials incorporated into the completed Project. Contractor shall mark or otherwise identify all such materials as the property of Owner.

EXEMPTION FROM SALES AND COMPENSATING USE TAXES AND SURCHARGES

a. Owner is exempt from payment of sales and compensating use taxes of the State of New York and of cities and counties on all materials separately sold to Owner pursuant to the Agreement. This exemption does not, however, apply to tools, machinery, equipment or other property purchased by, or leased by or to Contractor or a subcontractor, or to supplies or materials not incorporated into the completed Project. Contractor and its subcontractors shall pay any and all applicable taxes, including sales and compensating use taxes, on such unincorporated items, it being understood that in no case shall such tax be borne by Owner.

b. County will not pay any type of fuel surcharge unless otherwise stated in in Contract Documents. Any unauthorized fuel charges included in Contractor's payment requests will be disregarded.

LIENS

Neither the final payment under the Agreement nor any part of the retained percentage shall become due until Contractor delivers to Owner a complete release of all liens arising out of the Agreement, or receipts in full in lieu thereof, and an affidavit which certifies, so upon knowledge and information, that the releases and receipts include all the labor and materials for which a lien could be filed; but Contractor may, if any subcontractor or material supplier refuses to furnish a release or receipt in full, furnish a bond satisfactory to Owner, to indemnify Owner against any lien. Upon Owner's request Contractor shall, at its own expense, by bonding or otherwise, secure the prompt discharge of any lien or liens which may be filed against the property, labor, or materials in connection with the Agreement.

PROSECUTION AND PROGRESS

PRECONSTRUCTION CONFERENCE

At Owner's direction, prior to commencement of Work, Contractor and its major subcontractors shall attend a preconstruction conference. The conference may include discussion of proper coordination of Work, maintenance of schedules, and other aspects of the Project.

ON-SITE JOB MEETINGS

On-site job meetings will be held during Project construction. Supervisory personnel representing Contractor and its major subcontractors must attend, as required in Owner's sole discretion.

CONSTRUCTION SCHEDULE

a. Before commencing Work, Contractor shall submit to Owner for written approval, a construction schedule showing in detail the proposed sequence of Work, and the estimated date of starting and completing each stage of the Work in order to timely complete the Project. The schedule shall reflect the proposed percent of the value of the Agreement to be accomplished each month. If so required, the schedule shall be revised until it is approved by Owner. It is agreed and understood that Owner's approval of Contractor's construction schedule does not relieve Contractor from responsibility for completing its Work in accordance with the time frame specified in the Agreement. The construction schedule shall be coordinated with the proposed schedules of other contractor(s) and County workers, if any, engaged in work at the site. No payment will be made to Contractor until a construction schedule has been so approved.

b. Contractor shall coordinate its work so as to maintain its schedule(s), as approved. Should Contractor fail to adhere to any phase of the approved schedule, Contractor shall promptly adopt such additional means or methods of construction, including overtime, as may be necessary to make up lost time and complete each phase of its Work in accordance with the schedule, all at no additional cost to Owner.

c. The schedule shall be marked by Contractor to indicate progress, shall be resubmitted to Owner monthly, and shall reflect revised estimates and actual durations and percent complete. Resubmitted schedules shall be accompanied by a detailed description of Work to be accomplished during the succeeding month.

1. Documentation of Delay. The Contractor shall document delays and shall provide detailed information including but not limited to; the events that caused the delay, the party or parties responsible for the delay, activities in the current progress schedule affected by the events, and the magnitude of the delay using the current progress schedule update.

The Contractor shall maintain a contemporaneous tally of all delay days, those it contends are attributable to the Owner, and those it contends attributable to the Contractor. The Contractor shall submit the tally of delay days to the Engineer on a monthly basis. The Engineer will also maintain a contemporaneous tally of delay days, in order to facilitate agreement on the status and responsibility for delays, or to limit and document disagreements between the Contractor and the Owner.

If the Contractor alleges that a time related delay has or is occurring that impacts the Critical Path, the Contractor shall submit a monthly progress schedule update and revision with the next progress schedule submission, and a narrative Time Impact Analysis.

The Owner, as necessary, will either request in writing that the Contractor submit an Application for Extension of Completion Date and/or request in writing that the Contractor accelerate the work impacted, and submit a schedule revision which demonstrates how the acceleration will recover the necessary time. Upon submission of a progress schedule update and revision containing a Time Impact Analysis, the Owner will evaluate the merit of the requested time extension.

The Owner will review the documentation of delay within 14 calendar days of receipt and will provide a written response to the Contractor regarding deficiencies of the submission, required additional information and the Owner's technical review and findings to date.

2. Failure to Submit Progress Schedule. If the Contractor fails to submit a progress schedule to a degree that the Regional Construction Engineer deems such failure to adversely affect the management and/or administration of the contract, the Engineer may withhold approval of contract payments pursuant to Article 8 *No Payment on Contractor's Non-Compliance* of the contract agreement until such time as the Contractor submits the required progress schedule.

If the Contractor fails to submit the required progress schedule updates and revisions, the Contractor waives its rights to adjustments of time and related compensation for delays that accrue during the period in which the progress schedule has not been submitted in accordance with the detailed CPM scheduling requirements. The Owner will have no liability for any subsequent Contractor time related disputes which occurred during the period of time in which the Contractor failed to submit monthly progress schedule updates and revisions in a timely manner.

SUBCONTRACTORS

The Contractor is responsible for all work performed by Subcontractors, Trucking Firms, Manufacturers, Fabricators, Material Suppliers, Services and any other parties in the performance of the contract, regardless of whether Department approval has been obtained. The Contractor shall not enter into any subcontract with any person or firm listed as debarred from government contracts by the New York State Department of Labor on *https://applications.labor.ny.gov/EDList/searchPage.do* or by the Federal Government, General Services Administration on *https://www.sam.gov/SAM/*. Work shall be performed only by Subcontractors and Truckers specifically approved by the Regional Construction Engineer, and work shall not begin prior to approval by the Regional Construction Engineer. Work shall not be assigned by a Subcontractor to a lower tier subcontractor. Work by a non-approved Subcontractor or Trucker will be suspended by the Engineer and payment for work by a non-approved Subcontractor or Trucking Firm may be withheld.

A. Subcontractors. Except as provided below, Subcontractor approval is required for:

- Firms performing on-site work as defined in the contract documents.
- Firms performing the on-site maintenance of previously furnished and installed products.
- Firms delivering materials to the contract site and incorporating them directly into the work by the firm's on-site work force.

Subcontractor approval is not required for:

- Manufacturers, Fabricators and Material Suppliers who do not incorporate supplies or materials directly into the contract work.
- Service work which is not accounted through labor, equipment and materials, including, but not limited to Work Services and Professional Services.
- Off-Site Trucking and Material Delivery.
- Owner/Operator Trucking, both on-site and off-site.

1. **Subcontractor Approval.** Prior to approval of a Subcontractor by the Department, the Subcontractor shall file and have approved a completed Form CCA-2 *New York State Vendor Responsibility Questionnaire - For Profit Construction* with the Contract Management Bureau.

If a Contractor is not SSPC certified, Subcontractors performing structural paint removal operations and painting work shall be SSPC certified or alternatively certified by the Department in accordance with §105-03 *Methods and Equipment*.

The Contractor shall submit Subcontractor approval requests to the Owner. For each Subcontractor, the Contractor shall submit the following:

- AAP20 *D/M/WBE Participation Worksheet* (if applicable)
- CONR89 *Approval to Subcontract*
- Labor affidavit Form AC 2948 *Subcontractor's Certification;*
- HC-108 *Subcontractor's Certification - Project Specific Safety and Health Plan*;
- Proof of Insurance in accordance with §107-06 *Insurance;*
- *Contractor/Subcontractor SPDES Permit Certification* (if there is a contract SPDES Permit);
- CONR1 *Vendor Assurance of No Conflict of Interest or Detrimental Effect*, signed by an authorized executive or legal representative of the firm.

The Department reserves the right to suspend or withdraw its approval of subcontractors where the Department determines it is in the best interest of the Owner to do so, including, but not limited to a Subcontractor's failure to comply with Health and Safety requirements, failure to comply with the terms of the Contract, and/or failure to remain a responsible subcontractor for the entire duration of the Contract.

2. **Subcontract Provisions.** All Subcontracts shall be in writing and shall contain all pertinent provisions of the contract in regard to Federal and State Laws and Regulations. Upon request, the Contractor shall provide a copy of any requested written subcontract. All Subcontractors shall maintain insurance coverages as required by §107-06 *Insurance*.

All subcontracts, supply or equipment contracts in excess of $10,000 shall incorporate the provisions of §102-11 *Equal Employment Opportunity Requirements*. The provisions may be incorporated by reference.

All subcontracts shall incorporate the provisions of §105-21 *Civil Rights Monitoring and Reporting*.

The provisions may be incorporated by reference.

All subcontracts shall incorporate the provisions of §107-16 *Ensuring Pay Equity by State Contractors*. The provisions may be incorporated by reference.

All subcontracts shall incorporate the provisions of §108-05D. *Title VI Assurance*, including supply and equipment contracts, unless exempt by 49 CFR 21, or directives issued pursuant thereto. The provisions may be incorporated by reference.

All subcontracts, supply or equipment contracts shall incorporate the provisions of §105-14 *Disputed Work and Dispute Resolution*. The provisions may be incorporated by reference. If such subcontracts or supply or equipment contracts do not have similar provisions, then the State payments to the Contractor for such subcontract or supply or equipment work shall be limited to only that which are provided by the provisions of §105-14 *Disputed Work and Dispute Resolution* as if it were in effect for such subcontract or supply or equipment contract.

All Subcontractors working within the contract limits or at a facility dedicated to the contract shall have a written Project Safety and Health Plan in accordance with §107-05 *Safety and Health Requirements* or shall have a copy of the Contractor's written Project Safety and Health Plan and shall confirm by written agreement with the Contractor that all construction operations are adequately addressed. The Contractor shall have a copy of each Subcontractor's written Safety and Health Plan, and shall ensure that the Subcontractor's plans are not in conflict with the Contractor's written Safety and Health Plan.

All Subcontractors shall have a written policy addressing sexual harassment prevention in the workplace and provide annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of Section 201-G of the New York State Labor Law.

For Federal-Aid contracts, the Contractor shall directly incorporate all of the provisions of Form FHWA-1273 *Required Contract Provisions Federal-Aid Construction Contracts,* into all subcontracts, supply or equipment contracts; the provisions may not be incorporated by reference.

For Federal-Aid contracts, the Contractor shall directly incorporate the provisions of §108-05C. *DBE Program Assurance* in every subcontract. The provisions may not be incorporated by reference.

For Federal-Aid contracts, the Contractor shall directly incorporate the provisions of §107-15 *Use of United States-Flag Vessels* in every subcontract. The provisions may not be incorporated by reference

B. Owner/Operators. Owner/Operators are defined as individual businesses operated by the owner, who do not have any other employees, and therefore are not subject to prevailing wage rates. Prior to performance of on-site work or trucking by an Owner/Operator, the Contractor shall submit proof of commercial automobile insurance and a *Subcontractor's Certification - Project Specific Safety and Health Plan* or *Certification - Trucking Safety and Health Plan* to the Engineer.

In order to be an Owner/Operator, the following conditions shall be met:

1. The operator shall be the registered owner of the vehicle, and the name of the operator shall match the name of the owner on the vehicle registration; or,

If the registered owner of the vehicle is a firm or corporation, typically a finance or leasing company, the operator shall furnish a lease or purchase agreement for the vehicle.

2. Insurance for the vehicle should be carried in the Owner/Operator's name, or in the name of the registered owner.

C. **DBE Program Assurance.** The Contractor shall carry out the applicable requirements of 49 CFR 26 in the award and administration of Federal-Aid contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Department deems appropriate.

D. **Title VI Assurance.**

1. Compliance with Regulations. The Subcontractor shall comply with the Regulation relative to nondiscrimination in federally-assisted programs of the USDOT 49 CFR 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

2. Nondiscrimination. The Subcontractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Subcontractor shall not participate either directly or indirectly in the discrimination prohibited by 49 CFR 21.5, including employment practices when the contract covers a program set forth in 49 CFR 21Appendix B.

3. Solicitations for Subcontractors, Including Procurements of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential Subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and 49 CFR 21 relative to nondiscrimination on the grounds of race, color, or national origin.

4. Information and Reports. The Subcontractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by the Department or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a subcontractor is in the exclusive possession of another who fails or refuses to furnish this information the subcontractor shall so certify to the Department, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance. In the event of the Subcontractor's noncompliance with the nondiscrimination provisions of this contract, the Department shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

a. withholding of payments to the Contractor under the contract until the

Subcontractor complies, and/or
b. cancellation, termination or suspension of the contract, in whole or in part.

Wicks Law (see General Municipal Law § 101[1][a]-[c];[2]; State Finance Law § 135; and Public Authorities Law §§ 1045–i[2–a]; 1048–i[2–a]; 3303[10][c–1]; 3402[9][c–1]; 3603[9][c–1]; 3628[11][c–1];) requires separate specifications for County public works contracts over a specified dollar threshold. The dollar threshold for Chautauqua County is $500,000.00. Contracts exceeding that amount must include separate bids for the following types of work: plumbing and gas fitting; HVAC (steam heating, hot water heating, ventilation, and air conditioning apparatus); and electrical wiring and standard illuminating fixtures.

Pursuant to GML§101(5) each bidder on a public work contract, where the preparation of separate specifications is *not* required, shall submit with its bid a separate sealed list that names each subcontractor that the bidder will use to perform work on the contract, and the agreed-upon amount to be paid to each, for: (a) plumbing and gas fitting, (b) steam heating, hot water heating, ventilating and air conditioning apparatus, and (c) electric wiring and standard illuminating fixtures. After the low bid is announced, the sealed list of subcontractors submitted with such low bid shall be opened and the names of such subcontractors shall be announced, and thereafter any change of subcontractor or agreed-upon amount to be paid to each shall require the approval of County, upon a showing presented to County of legitimate construction need for such change, which shall be open to public inspection. Legitimate construction need shall include, but not be limited to, a change in project specifications, a change in construction material costs, a change to subcontractor status as determined pursuant to paragraph (e) of subdivision two of section two hundred twenty-two of the labor law, or the subcontractor has become otherwise unwilling, unable, or unavailable to perform the subcontract. The sealed lists of subcontractors submitted by all other bidders shall be returned to them unopened after the contract award.

CORRECTION OF WORK

a. Contractor shall promptly remove from the premises all materials condemned by Owner as failing to meet Contract Document requirements, whether or not incorporated in the Project, and shall promptly replace and re-execute its Work in accordance with Contract Documents, without expense to Owner. Contractor shall bear all associated costs and expenses, including without limitation additional testing, inspection, and Owner and Consultant services, including engineering services, made necessary thereby, and shall bear all costs and expenses of making good all work of other Project workers destroyed or damaged by such removal or replacement.

b. If Contractor does not proceed with the correction of such non-conforming work within seven (7) days after receipt of written notice from Owner, Owner may after such seven (7) day period give Contractor a second written notice to correct such deficiencies within a second seven (7) day period. If Contractor within such second seven (7) day period after receipt of such second notice fails to correct any deficiencies, Owner may, without prejudice to other remedies, use whatever means it deems necessary in its sole discretion, including use of its own forces, to correct such deficiencies. In such case a change order shall be issued deducting from payments then or thereafter due Contractor the costs and expenses of correcting such deficiencies, including compensation for any Consultant,

Owner, and/or Project worker's engineering services, and other services, costs, and expenses, made necessary by failure to correct such defective Work. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall immediately pay the difference to Owner. Upon default of immediate repayment Owner may, upon seven (7) calendar days written notice, and in addition to pursuit of other remedies available to it by law, sell non-conforming materials at auction or at private sale, and pay to Contractor the net proceeds thereof, after deducting all the costs and expenses that should have been borne by Contractor.

c. If Owner prefers to accept Work which is not in accordance with Contract Documents, Owner may do so instead of requiring its removal and correction, in which case the Agreement sum will be reduced as appropriate and payment amounts withheld accordingly.

PAYMENTS TO THE CONTRACTOR

a. Progress payments will be made by Owner to Contractor as stated in the Agreement, and in accordance with Section 106-b of New York General Municipal Law. At least fifteen (15) days before submission of its first application for payment, Contractor shall furnish to Owner a complete break-down of all lump sum items in the Agreement. This breakdown, modified where directed by Owner, will be used as a basis for preparing progress payments throughout the duration of the Agreement.

b. No separate payment will be made for Work-related costs or expenses, such as mobilization, materials, insurance or bonds, unless otherwise expressly stated in the Agreement.

c. No payment will be made for modifications until a formal change order for such modification has been fully executed.

d. Except to the extent otherwise provided herein, final payment will made upon the expiration of the guarantee period, or upon the completion of any work to be performed during the guarantee period, whichever time is later.

e. Neither the final payment nor any interim or partial payment shall constitute acceptance of any defective workmanship or material, or noncompliance with Contact Documents.

PAYMENTS WITHHELD

Owner may withhold from payment such amount, or on account of subsequently discovered evidence nullify the whole or a part of a payment, as Owner deems reasonably necessary to protect Owner from loss due to:

a. defective work not remedied;

b. a claim filed, or reasonable evidence indicating probable filing of a claim;

c. failure of Contractor to properly pay a sub-contractor, or to pay for material or labor;

d. a reasonable doubt that Contractor's Work can be completed for the balance then unpaid;

e. damage to another Project worker;

f. Owner's incurring of costs or expenses to correct a Work deficiency as provided herein;

g. acceptance of non-conforming Work as provided for herein;

h. Contractor's failure to comply with a Contract Document in relation to the receipt of State and/or Federal aid for the Project, after receiving written notification from Owner that said compliance is necessary;

i. costs and expenses incurred by Owner as a result of Contractor's failure to comply with Contract Documents, including without limitation costs for additional testing and inspection, and costs and expenses for Owner's, Consultant's or a Project worker's services and expenses, including engineering fees; or

j. failure to comply with other requirements of this contract.

If an above ground is removed, payment shall be made in the amount withheld on the basis of such ground.

NOTICE AND RECORDKEEPING

The Contractor shall provide the Engineer written notice of its contentions regarding Differing Site Conditions, Significant Changes in the Character of Work, Suspensions of Work Directed by the Engineer, disputed work, time related disputes or any other dispute. The notification and recordkeeping provisions in this Contract shall be strictly complied with for disputes of any nature and are a condition precedent to any recovery. Timely notice and recordkeeping affords the Department the opportunity to initiate measures that will mitigate damages to all parties and/or to agree to terms and conditions for timely payment for any eligible added costs.

A. Written Notice Requirements.

1. Differing Site Conditions. The Contractor shall provide written notice of its contentions to the Engineer, or the Engineer will provide written notice of the Department's contentions to the Contractor, within 15 calendar days after the appropriate party knew or should have known of any dispute regarding Differing Site Conditions.

2. Significant Changes in the Character of Work. The Contractor shall provide written notice of its contentions to the Engineer, or the Engineer will provide written notice of the Department's contentions to the Contractor, within 15 calendar days after the appropriate party knew or should have known of any dispute regarding Significant Changes in the Character of Work.

3. Suspensions of Work Directed By The Engineer. The Contractor shall provide written notice of its contentions to the Engineer within 7 calendar days of receipt of a notice to resume work.

4. Disputed Work. The Contractor shall provide written notice of its contentions to the Engineer within 15 calendar days of receipt of a direction to complete work that the Contractor believes is not contract work, any direction of the Engineer that the Contractor believes exceeds the requirements of the provisions of the contract.

5. Time Related Dispute. The Contractor shall provide written notice of its contentions to the Engineer within 15 calendar days of the occurrence of any event which affects the scheduled time

of performance, if the Contractor believes that it is or will be entitled to additional compensation for time related disputes, whether due to delay, extra work, disputed work, breach of contract or other causes.

After submitting the required notice, the Contractor shall follow the dispute process set forth in Disputed Work and Dispute Resolution.

B. Recordkeeping Requirements. If an agreement on an adjusted price has not been reached before the work begins, the Contractor shall keep and submit records for each operation and location sufficient to support any additional costs, in accordance with §109-05C. *Force Account Report*.

1. Differing Site Conditions. If an agreement on an adjusted price has not been reached before the work begins, the Contractor shall keep and submit daily records to document all labor, material and equipment used for disputed work in accordance with §109-05C.1. *Daily Summary*.

2. Significant Changes in the Character of Work. If an agreement on an adjusted price has not been reached before the work begins, the Contractor shall keep and submit daily records to document all labor, material and equipment used for disputed work in accordance with §109- 05C.1. *Daily Summary*.

3. Suspensions of Work Directed By The Engineer. The Contractor shall keep and submit daily records to document all labor, material and equipment used in accordance with §109-05C.1. *Daily Summary*, beginning upon receipt of a notice of Suspension of Work from the Department.

4. Disputed Work. During the progress of any disputed work for which an agreement on an adjusted price has not been reached, the Contractor shall keep and submit daily records of all labor, material and equipment used for disputed work in accordance with §109-05C.1. *Daily Summary*.

5. Time Related Disputes. If the Contractor is claiming time related damages, the Contractor shall keep and submit daily records of all labor, material and equipment for each operation and location affected by the delay in accordance with §109-05C.1. *Daily Summary*. Other records shall, as far as practicable, be sufficient to support any costs claimed under §109-05D.1. *Time Related Dispute Compensation*.

For the duration of the time related dispute, the Contractor shall prepare and submit weekly reports to the Engineer setting forth the following:

a. Potential effect on the Contractor's schedule.
b. Identification of all operations that have been, are, or may be delayed.
c. Explanation of how the Department's acts or omissions are affecting or delaying operations.

C. Failure to Comply. Failure of the Contractor to provide such written notice in a timely fashion will be grounds for denial of the dispute and the Department does not have to show prejudice to its interest before such denial is made. In the event the Contractor fails to provide the required written notice within the required time limits, or fails to maintain and submit the records specified above, any claim for compensation shall be deemed waived, notwithstanding the fact that the Department may have had actual notice of the facts and circumstances comprising such dispute and is not prejudiced by such failure of notice or recordkeeping.

SIGNIFICANT CHANGES IN THE CHARACTER OF WORK.

In accordance with 23 CFR 635.109(a)(3):

The Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the Surety, and the Contractor agrees to perform the work as altered.

If the alterations or changes in quantities significantly change the character of work under the contract, whether such alterations or changes are in themselves significant changes in the character of work, or by affecting other work cause such other work to become significantly different in character, an adjustment, excluding anticipated profits, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made by the Department, either for or against the Contractor, in such amount as determined to be fair and equitable.

If the alterations or changes in quantities do not significantly change the character of the work to be performed under the contract, the altered work will be paid for as provided elsewhere in the contract. The term "significant change" shall be construed to apply only to the following circumstances: when the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or when a Major Item of work, as defined elsewhere in the contract, is increased in excess of 125 percent, or decreased below 75 percent of the original contract quantity.

Any allowance for a change in unit price shall apply only to that portion of work in excess of 125 percent of the original contract item quantity, or in the case of a decrease below 75 percent, to the actual amount of work performed.

The Department will administer the above Federal regulations as follows:
The Department may make, in writing, at any time during the work, any necessary changes in quantities and alterations to the work in order to satisfactorily complete the project. If the Contractor or the Department discovers a change that constitutes a significant change in the character of work as defined below, the party discovering the change shall promptly provide the other party written notice ofthe significant change in the character of work before additional work is performed. The Contractor shall comply with notice and recordkeeping provisions of Notice and Recordkeeping.

The Contractor or the Owner, as the case may be, must make written notice to the other party of the existence of an apparent significant change in the character of work if that party wishes to adjust the contract price or time of performance, including direct costs and/or time related compensation, if applicable. Such notice shall be given within 15 calendar days of the time at which the party had knowledge, or should have had knowledge of an event, matter or occasion which results in a significant change in the character of work. The Department will have no liability and no adjustment will be made for any damages which accrued more than 15 calendar days prior to the filing of such a notice with the Engineer.

Upon written notice, the Engineer will investigate the changes and if it is determined that the alterations or changes in quantities significantly change the character of work, whether such alterations or changes are in themselves significant changes in the character of work, or by affecting other work, cause such other work to become significantly different in character, an adjustment, excluding

anticipated profits, will be made to the contract. The Engineer will make an initial response in writing to the Contractor, within 21 calendar days, with a determination whether or not an adjustment to the contract is warranted. Situations requiring examination of the site or input from other Department personnel may require additional time to resolve. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made by the Department, either for or against the Contractor, in such amount as determined to be fair and equitable.

No contract adjustment will be allowed unless the Contractor has provided the required written notice, or written notice was provided to the Contractor by the Owner.

If an agreement on an adjusted price has not been reached before the work begins, the Contractor shall keep daily records and make reports of all labor, material and equipment used in connection with such work and the cost thereof as specified in §109-05C. Force Account Reports.

Compensation for increased costs of the work resulting from significant changes in the character of work will be made in accordance with §109-05 Extra Work and Time Related Compensation. Compensation for time related costs, if any, will be made in accordance with §109-05D. Time Related Dispute Compensation.

A. Character of Work. The term "significant change" shall be construed to apply only when the character of the work differs materially in kind or nature from that involved or included in the original proposed construction.

B. Major Items. The term "significant change" shall be construed to apply to Major Items (as defined in §101-02 Definitions of Terms) only when the quantity of a Major Item is more than 125%, or is less than 75% of the original contract quantity. Any allowance for a change in the unit price shall apply only to that portion of work in excess of 125% of the original contract item quantity, or to the actual amount of work performed if the quantity decreases below 75% of the original contract item quantity. The Contractor or the Owner, as the case may be, must make written notice to the other party of the "significant change" in the quantity of a major item if that party wishes to adjust the contract price or time of performance. Knowledge of a "significant change" in quantity could result from receipt of a change order (approved or unapproved), a letter directing a change in the contract work, review of plan details and estimates, review of work completed or progress payment quantities, or a combination of the above. Payment for major items will be limited in accordance with §109-02 Payment for Altered Quantities.

C. Minor Items. The term 'significant change' shall be construed to apply to Minor Items (as defined in §101-02 Definitions of Terms as defined in NYS DOT Standard Specifications Volume 1 Section 100) only when extra work both (1) increases the quantity of a Minor Item to more than 200% of the original contract quantity and (2) results in an increase of more than $5,000 from the original contract amount. Any allowance for a change in the unit price shall

apply only to that portion of work both in excess of 200% of the original contract item quantity, and in excess of $5,000 greater than the original contract amount.

D. Composite Items. Composite items, for the purposes of this subsection, consist of rock and non- rock components, and are limited to unclassified excavation and trench and culvert excavation identified on the Earthwork Summary Sheets. The term "significant change" shall be construed to apply only if the composite item is a Major Item, any individual component of the composite is less than 75% or more than 125% of the quantity stated in the Earthwork Summary Sheet used by the Department in preparing the contract, and the reasonable costs of the composite item either increases or decreases as a result of the change. The adjustment in payment shall be based on variance in quantity of the individual components from the quantity stated in the Earthwork Summary Sheet. For contracts containing Major Items of unclassified excavation and/or trench and culvert excavation, the Contractor shall submit, at the request of the Engineer, its price breakdown of the bid price of the composite item for the rock and non-rock components.

E. Fixed Quantity Items. Certain items of work may be "fixed quantity" items, and payment will be restricted to the quantity stated in the Estimate of Quantities. The term "significant change" shall be construed to apply to fixed quantity items only if, during the progress of the work, the quantity of work is found to be less than 75% or more than 125% of the quantity stated in the Estimate of Quantities.

F. Lump Sum Items. Certain items of work may be Lump Sum items, wherein a single bid amount is intended to provide payment for all necessary work during the execution of the contract. The term "significant change" shall be construed to apply to lump sum items only to the extent that changes in other contract work items result in a significant change in the character of work required to complete "Lump Sum" items of work.

EMERGENCIES

In the event of any emergency endangering life or property, Owner shall have the authority to order Contractor to perform Work necessary to avert or minimize the effect of such emergency. Contractor shall proceed with such Work upon receipt of Owner's written direction in the form of a change order. In the event Contractor claims any such Work is extra work, Contractor shall make a claim for extra costs in accordance with Paragraphs 24 and 27 herein. In directing or authorizing changes in the Work in any emergency situation, Owner shall not be responsible for directing Contractor's methods and techniques necessary to implement such changes. Changes directed or authorized by Owner in an emergency situation shall not relieve Contractor of its responsibility for safety. If Contractor does not satisfactorily respond to Owner's request to perform Work necessary to avert or minimize an emergency situation, Owner may immediately perform such Work and charge Contractor for all additional expenses in performing such Work. Any emergency-caused costs and expenses shall be deducted from the amount payable under the Agreement, and withheld accordingly.

In the event of an emergency endangering life or property, Contractor may act, without previous instructions from County, in a diligent manner. It shall notify County of such act immediately thereafter.

DELAY DAMAGES

Contractor agrees to make no claim for damages for delay in the performance of the Agreement, except that if Contractor's delay is caused by Owner's bad faith or willful, malicious, or grossly

negligent conduct, and such delay causes an increase in the cost of performance of Work, then the Agreement price shall be adjusted accordingly. The adjustment in price shall include only those costs directly attributable to such delay and shall be limited to:

a. increased labor costs (direct and indirect);
b. increased material costs;
c. increased field supervision costs; and
d. increased field office overhead

Any such increased cost shall be subject to verification by Consultant and/or Owner.

RIGHT TO USE WORK

Owner shall have the right to take possession of or use any part of the completed or partly completed Work before final acceptance. Such possession or use shall not be deemed an acceptance of any Work not completed in accordance with Contract Documents. No extension of time shall be given to Contractor in the event Owner takes possession of partially completed Work in which completion has been delayed due to Contractor not performing in accordance with the Agreement.

GUARANTEE PERIOD

a. The guarantee period shall commence upon County's final acceptance of all Work, and continue for a period of one (1) year. The guarantee period shall have a value of five (5) percent of the Agreement payment amount.

b. Upon Owner's final acceptance of all Work, Contractor shall submit to Owner duplicate copies of a general guarantee for the entire Work. The guarantee shall be unconditional and cover all labor, material, or equipment. All guarantees shall be written in a form satisfactory to Owner.

c. Contractor shall remedy any defective Work appearing within one (1) year from the date of commencement of the guarantee period and shall pay all costs, expenses, and damages caused by such defective Work, or occasioned in correcting the same.

d. If any defects occur within the guarantee period Contractor shall, within three (3) days after receipt of notification of such defects, take the necessary action to correct such defects. The correction of defects in equipment, materials, and workmanship which may develop during the guarantee period shall be at the expense of Contractor. If Contractor fails to comply with the requirements of this paragraph, Owner may have the corrective work done and charge Contractor therefore. Contractor shall bear all costs and expenses of correcting defects which shall include without limitation any additional testing, inspection, and compensation for Owner's services and expenses, including without limitation Consultant's and Owner's engineering fees.

e. Request for final payment for Work may be submitted upon expiration of the guarantee period unless any defects in equipment, materials, and workmanship remain on such date.

f. Final payment for Work shall include retainage withheld by Owner in accordance with the Contract

Documents, less any offset withheld in accordance with the Contract Documents for corrective work, damages, or other items.

g. In accordance with the Agreement, Owner may retain the sum of five percent (5%) of the Agreement price during the guarantee period as security for performance of guarantee Work; provided, however, that Contractor may submit in the alternative a negotiable United States, New York State, or municipal bond in accordance with §106 of New York General Municipal Law.

OWNER'S RIGHT TO TERMINATE AND/OR COMPLETE CONTRACT

Should Contractor become insolvent, refuse or neglect to timely or properly prosecute Work as directed by Owner, or otherwise fail in the performance of any of its obligations under the Agreement, and should Contractor's surety, after proper request, fail to timely or properly complete the Work, then Owner, upon sufficient cause existing to justify such action, and after giving Contractor and Contractor's surety thirty (30) calendar days written notice, may, without prejudice to any other right or remedy, terminate the Agreement and take possession of the premises and of all materials, tools, equipment, and appliances thereon and finish the Work by whatever method it may deem expedient. In such cases, no further payment shall be made to Contractor. Should Owner's resulting costs, expenses, and damages exceed the unpaid balance of the Agreement, Contractor and its sureties shall promptly pay the difference to Owner. Owner shall audit and certify the expense incurred by it in finishing the Work, and the damages, costs, and expenses incurred through Contractor's fault.

REMOVAL OF EQUIPMENT AND SUPPLIES

In the case of termination of the Agreement before completion of the Work, Contractor, if notified to do so by Owner, shall promptly remove any part or all of its equipment and supplies from Owner's property, failing which Owner shall have the right to remove such equipment and supplies, at Contractor's expense, and to keep or dispose of such items as it deems appropriate.

MATERIAL AND WORK REQUIREMENTS

WORKMANSHIP

Unless otherwise specifically stipulated in the Specifications, all workmanship shall be of the best quality and all workmanship and services rendered shall meet any applicable building codes and statutory requirements. All equipment, materials, and articles incorporated in the Work shall be new and of the best grade of their respective kinds for the purpose.

SHOP DRAWINGS

a. Contractor shall submit to Owner for written approval a schedule of shop drawing submissions. Owner shall be notified immediately of changes in the schedule. Any changes in the shop drawing submission schedule will be presented to Owner for approval. Shop drawings shall be submitted in accordance with the approved schedule of shop drawing submissions and any approved changes thereto.

b. Contractor shall submit for Owner's written approval shop drawings for all fabricated Work and for all manufactured items required to be furnished pursuant to Contract Documents. Shop drawings

shall be submitted in sufficient time to allow at least two (2) work days for the examination of each drawing in a set of shop drawings, or a minimum of ten (10) work days per set. A set of shop drawings shall be considered to be all drawings submitted by Contractor on any calendar day. If the shop drawings are detained for examination for a period longer than stated above, such detention will be taken into account when considering any application by Contractor for an extension of time for the completion of the Work. All shop drawings will be time and date stamped as they are received, and recorded in an Owner log.

c. Owner's review of shop drawings will be confined to general arrangement and compliance with Contract Drawings and Technical Specifications; it will not be for the purpose of checking dimensions, weights, clearances, fitting, tolerances, interferences, coordination of trades, etc. Owner's approval of Contractor's drawings shall be considered as a gratuitous service, given as assistance to Contractor in interpreting the requirements of Contract Documents. Approval shall in no way relieve Contractor of its responsibilities under the Agreement. Any fabrication, erection, setting, or other Work done in advance of the return of shop drawings marked by Owner as "Approved" or "Approved as Noted," shall be entirely at Contractor's risk.

d. Shop drawings shall be furnished to Owner in accordance with the sequence of Work. Drawings shall be submitted, corrected and approved as set forth below.

(1) Initially two (2) copies shall be submitted to Owner for review. After review, one (1) copy will be returned to Contractor.

(2) When shop drawings are returned for correction, they shall be corrected and resubmitted for approval as described above, and such procedure will not be considered as grounds for delay in completing Work.

(3) When approved, three (3) additional copies of the approved shop drawings shall be immediately submitted to Owner. All copies of approved shop drawings will be identified by Owner as having received such approval by being so stamped and dated. Failure of Contractor to supply the required number of approved shop drawings for field use can constitute grounds for rejecting Work at the job site.

e. Shop drawings submitted by subcontractors shall be sent directly to Contractor for preliminary checking. Owner will submit them to Consultant at the proper time, so as to prevent delays in delivery of materials.

f. Contractor shall thoroughly check all subcontractor shop drawings for accuracy and completeness of measurements, sizes or members, materials, and details, and shall verify that they conform to Contract Document requirements. Drawings found to be inaccurate, incomplete, or otherwise in error shall be returned by Contractor to subcontractor, for correction before they are submitted to Owner. Upon approval, Contractor shall: mark the drawing as being checked and approved, with its approval date and signature; then submit such documents to Owner or Owner's designee.

g. All details on shop drawings submitted for approval shall clearly show the relation of the various parts. Where the Work depends upon field measurements, such measurements shall be obtained by

Contractor and noted on the shop drawings before they are submitted for approval.

h. All submissions shall be properly referenced to clearly indicate the specification section, location, service, and function of each particular item. All submissions for one item or group of related items shall be complete. Where manufacturer's publications, in the form of catalogues, pamphlets, or other data sheets, are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the item for which approval is requested. Identification of items shall be made in ink. Submissions showing only general information are not acceptable.

i. If the shop drawings contain any departures from Contract Document requirements, specific mention thereof shall be made in Contractor's letter of transmittal. Where such departures require revisions to layouts or structural changes to Work as shown, Contractor shall, at its own expense, prepare and submit revised layout and structural drawings for approval. Such drawings shall be the same size as County's original Contract Drawings unless otherwise approved.

j. The review of Shop Drawings submitted by Contractor shall not constitute a waiver of any of the requirements of the Agreement, nor shall County be compelled to accept any structure, equipment or apparatus unless it passes all tests and requirements of Contract Documents.

SAMPLES

Contractor shall furnish for Owner approval, with such promptness as to cause no delay in its Work or in that of any other Project worker, all samples required by Contract Documents. Owner shall review and approve or reject such samples, with reasonable promptness, such review being limited to conformance with the design, and compliance with Contract Documents. The Work shall be in accordance with approved samples.

STANDARD PRODUCTS AND MATERIALS

All materials, equipment, and accessories shall be new and unused and shall be essentially the standard product of a manufacturer regularly engaged in the production of such material or equipment, and shall essentially duplicate material or equipment that has been in satisfactory operation at least five (5) years. Contractor shall, if required, furnish evidence as to the kind and quality of materials used by Contractor. Owner reserves the right to reject any material or equipment manufacturer which, although meeting the above requirements, does not provide satisfactory evidence indicating adequate and prompt post-installation repair and maintenance service, as required to suit the operational requirements of Owner. Items of any one type of materials or equipment shall be the product of a single manufacturer.

BUY AMERICA

In accordance with 23 USC 313, 23 CFR 635.410 and Section 146 of the State Finance Law, permanently incorporated predominantly steel and/or iron materials/products shall be domestically produced, regardless of the percentage the materials/products comprise in a manufactured product, or form the materials/products take.

Control of Materials.

To qualify as domestic, all manufacturing processes, including melting, manufacturing, fabricating, grinding, drilling, welding, finishing, and coating of any product containing steel and/or iron materials, must have been performed in the United States. A domestic product is a manufactured steel and/or iron material/product that was produced in one of the 50 States, the District of Columbia, or in the territories and possessions of the United States. Raw materials used in the steel and/or iron materials may be imported. Raw materials are materials such as raw iron ore, and waste products which are used in the manufacturing process to produce the steel and/or iron material/product. The FHWA has granted a nationwide waiver for pig iron and processed, pelletized and reduced iron ore. Waste products include scrap (i.e. steel no longer useful in its present form from old automobiles, machinery, pipe, railroad rail, steel trimmings from mills or product manufacturing) Extracting, crushing, and handling the raw materials which are customary to prepare them for transporting are exempt from Buy America. The use of foreign source steel billets or iron ingots are not acceptable under Buy America. All items, regardless of origin, shall comply with their individual specification requirements and with the requirements stated elsewhere in this subsection. The Contractor shall ensure the domestic steel and/or iron materials are supplied in conformance with the above referenced laws.

For Federal-Aid contracts, the Contractor may permanently incorporate in the construction of this contract a minimal amount of foreign steel and/or iron materials, if the combined cost of such materials does not exceed one-tenth of one percent (0.1 %) of the total contract cost or $2,500, whichever is greater. The combined cost of foreign steel and/or iron materials will be the value of the materials as they are delivered to the contract, documented by invoice or bill of sale to the Contractor.

For Non-Federal-Aid contracts, the Contractor shall provide structural steel, structural iron, reinforcing steel and/or other major steel items to be permanently incorporated in the work produced or made in whole or substantial part in the United States, its territories or possessions. In the case of a structural iron or structural steel product, all manufacturing must take place in the United States, its territories or possessions, from the initial melting stage through the application of coatings, except metallurgical processes involving the refinement of steel additives.

A. **Waivers.**

1. ***Federal-Aid Contracts.***

The Contractor may request a waiver if it can be demonstrated that the use of domestic steel and/or iron materials would be inconsistent with the public interest or that such materials / products are not produced in the United States in sufficient and reasonably available quantities and of satisfactory quality.

The Contractor shall submit a waiver request to the Engineer which includes copies of all documentation verifying the unavailability of the material or product, and/or justification.

The Department will submit approved waiver requests to the FHWA for review. The Contractor shall investigate and respond to any public comments made to the FHWA Office of Program Administration, indicating that a domestic supplier can provide the material for which a waiver has been requested. Final approval of the Buy America Waiver request will be made by the Administrator, Federal Highway Administration. The waiver will be effective when it is posted in the Federal Register.

2. **Non-Federal-Aid Contracts.**

The Contractor may request a waiver if it can be demonstrated that the use of domestic steel and/or iron materials would not be in the public interest, would result in unreasonable costs, or

that such iron or steel, including without limitation structural iron and structural steel, cannot be produced or made in the Unites States in sufficient and reasonably available quantities and of satisfactory quality.

The Contractor shall submit a waiver request to the Engineer which includes copies of all documentation verifying the unavailability of the material or product, and/or justification.

Waiver requests will be reviewed by the affected Department program areas and approved by the Deputy Chief Engineer, Construction (DCEC).

B. **Certifications.**

A Manufacturer's Certification is required to certify that the material / product is of domestic origin. Acceptable statements are: "Conforms (or Does not conform) to the requirements of NYSDOT Standard Specifications §106-11 *Buy America*" or "Conforms (or Does not conform) to the requirements of 23 CFR 635.410 *Buy America Requirements*." Certifications shall comply with §106-04 *Material Acceptance Records*.

CERTIFICATES

Materials or equipment delivered to the site shall be accompanied by certificates, signed by an authorized officer of the manufacturing company, guaranteeing that the materials or equipment conform to Specification requirements. Such certificates shall be immediately delivered to Owner. Materials or equipment delivered to the site without such certificates are subject to rejection.

TESTS

Owner reserves the right to independently perform, at its own expense, field and laboratory tests on random samples of material, or performance tests on equipment delivered to the site. These tests, if made, will be conducted in accordance with the appropriate referenced standards or bid Specification requirements. The entire shipment represented by a given sample, samples or piece of equipment may be rejected on the basis of the failure of samples or pieces of equipment to meet specified test requirements. All rejected materials or equipment shall be removed from the site, whether stored or installed in the Work, and the required replacements shall be made, all at no additional cost to Owner.

EQUIVALENTS AND SUBSTITUTIONS

a. Whenever a particular brand or make of material, equipment, or other item is specified or is indicated in Contract Documents, any other brand or make which, in the opinion of Owner, is equivalent in quality, value, performance, and suitability to that specified or indicated, may be offered except where specifically stated otherwise.

b. A particular brand or make of material, equipment or other item which is not equivalent in quality, value, performance and suitability may be considered as a substitute if it is determined by Owner to be in the best interest of Owner.

c. Contractor shall submit complete descriptive literature and performance data together with samples of the materials, where feasible, for each proposed equivalent or substitution. No equivalent in quality, value, performance and suitability, or substitution items, shall be used in the Work without Owner's prior written approval.

d. In all cases Owner shall be the sole judge as to whether a proposed equivalent or substitution is to be approved, and Contractor shall have the burden of proving the same, at its own cost and expense, to the satisfaction of Owner. Contractor shall abide by Owner's decision when a proposed equivalent or substitution item is judged to be unacceptable, and shall in such instances furnish the item specified or indicated. Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by Owner in considering an equivalent or substitution proposed by Contractor or by reason of Owner's failure to approve an equivalent or substitution proposed by Contractor.

e. Where the approval of an equivalent or substitution requires revision or redesign of any part of the Work, all such revision and redesign, and all new Drawings and details required therefore, shall be subject to the approval of Owner and shall be provided by Contractor at its own cost and expense. Any changes in Project work arising out of such revisions and redesign shall be performed and/or paid for by Contractor. Any savings realized by Contractor as a result of an approved equivalent or substitution, including any savings in installation costs or related construction costs, shall be passed on to Owner.

VALUE ENGINEERING CHANGE PROPOSAL (VECP)

A. Purpose and Scope. The purpose of a Value Engineering Change Proposal (VECP) is to encourage the use of the Contractor's ingenuity and experience in arriving at alternative construction designs, methods, and procedures that result in a lower direct cost to accomplish a contract requirement. It is the intent of this provision to share with the Contractor any substantial direct cost savings which may be generated as a result of a VECP offered by the Contractor and approved by the Department. A VECP is a Contractor-initiated change request. If approved, the changes and payments will be authorized through the change order process. Before a VECP can be implemented, it must pass through three approval processes: conceptual approval, formal approval, and change order approval. To expedite the review process, the Contractor has the option of jointly submitting the conceptual VECP and the formal VECP for simultaneous review. If the VECP receives formal approval, as part of the change order process the Contractor may request that the Department consider granting advanced authorization of extra work.

The VECP should produce direct cost savings to the Department and the public without, in the sole judgment of the Department, impairing essential functions and characteristics of the facility including but not limited to service life, economy of operation, ease of maintenance, desired appearance, and safety. The Contractor, when developing a VECP, shall address the designer's objectives, environmental permit requirements and regulations, commitments made to the public to mitigate the impact of construction, and other such concerns.

The "direct cost savings" is the difference of the "construction savings" generated by implementing the VECP minus reasonable "design costs" associated with the VECP. The "construction savings" is the difference between what it would cost to complete all the contract work without implementing the VECP and the cost to complete all the contract work if the VECP is implemented. This includes any changes to quantities or unit prices across the entire contract if affected by the VECP. If the estimated cost to complete all the contract work without implementing the VECP differs from the contract bid amount for the work, supporting documentation to explain the variance shall be provided. Reimbursable "design costs" are specific to engineering changes (examples: design changes, plan sheet revisions, and quantity estimating). Expenditures toward

proposal preparation (examples: scheduling, documentation, cost analysis, material research, etc.) are not reimbursable.

Indirect cost savings (time, user delay, railroad force account costs, inspection costs, etc.), although considered when reviewing the merits of the VECP, are not reimbursed. A VECP may alter the progress schedule and milestone dates, which in turn could affect time-related contract provisions.

Proposals that reduce the time to complete the contract, and only result in indirect cost savings, may be accepted based on the mutual benefit derived. These proposals will be evaluated in accordance with §104-10F. *Time Savings*.

B. ***Submittal of Conceptual VECP.*** A conceptual proposal is required for all VECP. It should outline the general technical concepts associated with the VECP and the estimated direct cost savings which may result. Upon review by the Department, one of the following actions will be taken:

- Conceptual approval and a request for the Contractor to submit a formal VECP.
- Request for additional information
- Rejection of the VECP

The Contractor shall submit an original and three copies of the conceptual VECP to the Engineer along with any additional information requested by the Department. The conceptual VECP should contain sufficient information for concept review and evaluation, including the following as a minimum:

1. ***Conceptual VECP Summary.*** A summary of the VECP identified as "Conceptual VECP" which includes:

a. Short title (description) of the VECP (10 or less words).

b. Contract information (Contract D number, PIN, contract description, contractor, federal aid number if applicable, letting date, Region, and county).

c. Original total contract bid price.

d. Estimated contract cost. This may be different from the original total contract bid price due to addition or alteration of work (i.e., the estimated cost to complete the work if the VECP is not implemented). The Engineer must concur with the estimated contract cost. Estimated contract cost if the VECP is implemented (excludes VECP design cost and any VECP construction savings reimbursement).

e. Estimated VECP construction savings (Item d. minus Item e.).

f. Estimated VECP design cost (Not all VECP will have design cost).

g. Estimated direct cost savings due to the VECP (Item f. minus Item g.).

h. Fifty percent of the estimated direct cost savings (This should equal the overall savings to the Owner).

i. Estimated total adjusted contract cost if VECP is implemented (includes VECP savings and design cost reimbursements).

j. The type of VECP (either "Cost Savings" or "Time Savings Only").

k. Date by which the authorization of extra work (change order) must be granted. (If time sensitive, requests for advance authorization of extra work per §104-02 *Changes, Contingencies, Extra Work and Deductions* will be considered.)

l. Identification of any new or existing contract pay items requiring agreed prices.

m. Identification of any materials with long lead times (to order, fabricate, deliver, etc.) that may require purchase authorization from the Engineer prior to formal approval/disapproval of the VECP, or may delay the implementation of the VECP.

Identify any date by which authorization to order these materials must be received without affecting the progress schedule.

n. A basic description of the VECP and associated benefits and impacts (progress schedule, environmental, maintenance & protection of traffic, quality, etc.).

2. ***Conceptual Plans.*** Conceptual plan drawings.

3. ***Design Criteria.*** If the VECP proposes design changes, supporting technical design criteria shall be provided.

4. **Schedules.**

a. The most recently approved baseline progress schedule.

b. The most recently approved construction progress schedule update.

c. A draft, proposed, revised progress schedule illustrating the impacts of the VECP. The schedule shall identify: (1) the time required to develop a formal VECP; (2) the time required to order, fabricate, and deliver materials with long lead times; (3) the time required to obtain any environmental permits or other required approvals; (4) any anticipated progress schedule changes (contract completion date, milestone dates, task durations, etc.); (5) the latest date by which authorization of the VECP extra work must be granted without affecting the schedule. The draft progress schedule should provide a sufficient level of detail upon which the reasonableness of the VECP can be determined.

Should the Department find that insufficient time is available for review and processing, it may reject the VECP solely on such basis. If the Department fails to respond to the VECP by the date specified, the Contractor will consider the VECP rejected and will have no basis for a dispute against the State as a result thereof. The Department may accept a VECP that requires a contract time extension if sufficient cost savings are anticipated.

5. ***Estimate of costs.*** The conceptual VECP estimate of costs should include sufficient information to determine the reasonableness of the VECP. If the proposal requires the ordering of materials, the Contractor needs to provide documentation from the suppliers to justify the cost of the materials.

6. ***Previous Use or Testing.*** A description of any previous use or testing of the VECP on another Department contract or elsewhere, the conditions and results therewith. The Contractor shall submit the technical aspects of the VECP in sufficient detail so the Department can determine the suitability of the VECP from an engineering perspective. If the technology is new, test information shall be provided to the Department's satisfaction. If a similar VECP was previously submitted on another Department contract, indicate the date, contract number, and the action taken by the Department.

C. ***Submittal of Formal VECP.*** Upon notification by the Engineer that the conceptual VECP is approved and a formal VECP is necessary, the Contractor will submit to the Engineer an original and three copies of the following materials and information for each formal VECP along with any additional information requested by the Department:

1. ***Formal VECP Summary.*** A summary of the VECP, identified as "Formal VECP", which follows the conceptual VECP summary format and information requirements (Information and estimates may have changed since the conceptual VECP).

2. ***Complete Plans and Specifications.*** Complete plans and specifications, which meet Department standards, showing the proposed changes relative to the original contract features and requirements. The Department requires a Professional Engineer's stamp and signature on any significant engineering changes.

3. ***Field Change Sheets.*** Field change sheets and/or shop drawings. If the VECP results in a field change, and those items affected require the submission of shop drawings, the shop drawings will not be accepted unless accompanied by corresponding field change sheets. Documents shall be developed in compliance with Department requirements. The Department requires a Professional Engineer's stamp and signature on any significant engineering changes.

4. ***Schedules.*** The same information requirements as for the conceptual VECP apply, except that a formal , proposed, revised progress schedule in accordance with §108-01 *Progress Schedule* is required.

5. ***Cost Analysis.*** A complete cost analysis indicating quantity changes, unit price changes, and new contract pay items. As a minimum it shall include:

a. An itemized comparison of estimated costs to complete all the contract work with implementing the VECP and without implementing the VECP.

b. Proposed unit prices for any new contract pay items introduced by the VECP and appropriate documentation for review under the Agreed Price process.

c. Proposed unit prices for any existing contract pay items for which agreed prices are sought due to a significant change in character of work (quantity or complexity), see *Significant Changes in the Character of Work*. Appropriate documentation for review under the Agreed Price process is required.

d. The cost of any items with long lead times (e.g., materials ordered) required after conceptual approval and before final approval shall be identified.

6. ***Differences.*** Full descriptions of the difference between the existing contract requirements and the proposed changes, and the comparative advantages and disadvantages of each, including considerations of service life, economy of operation, ease of maintenance, traffic flow, safety, desired appearance, progress schedule, and any increase/reduction of environmental impacts.

7. ***Technical Presentation.*** The Contractor may be required to conduct a technical presentation as part of the review process.

8. ***Cost Documentation.*** All formal VECP costs submitted shall be supported by documentation as required by §109-05 *Extra Work and Time Related Compensation*.

The Department will not formally approve any VECP until all required VECP documentation has been submitted and is acceptable to the Department.

A formal VECP may be submitted concurrently with the conceptual VECP, however, the Contractor assumes any costs associated with the formal VECP at its own risk. Reimbursable costs will be considered only if the conceptual VECP is approved. Clearly identify whether a VECP is being submitted for conceptual approval, formal approval, or both.

Once a formal VECP has been approved, the VECP will then be submitted as an order-on- contract and processed accordingly. If time sensitive, requests for advanced authorization of extra work per §104-02 *Changes, Contingencies, Extra Work and Deductions* will be considered, but only after formal VECP approval. The Contractor is responsible for submitting all appropriate information to the Engineer in a timely manner.

D. ***Conditions.*** The Contractor shall not base any bid prices on the anticipated approval of a VECP and should recognize that any VECP may be rejected. The following terms and conditions apply to VECP:

1. A VECP will only be considered after the contract is awarded.

2. A VECP applies only to the contract for which it was submitted. One VECP shall not be submitted for multiple contracts. Approval or disapproval of a VECP on one contract does not guarantee approval or disapproval on another contract.

3. The VECP becomes the property of the Department and will contain no restrictions imposed by the Contractor on its use or disclosure. The Department will have the right to use, duplicate, and disclose in whole or in part any data necessary for the utilization of the VECP. The Department retains the right to utilize any accepted or rejected VECP or part thereof on any other project without any obligation to the Contractor.

4. Approval of the conceptual VECP in no way obligates the Department to approve the formal VECP. The Contractor will have no claim against the Department as a result of the rejection of any such conceptual or formal VECP except as otherwise provided in §104-10E.4.

5. When the Department is in the process of making design and specification revisions and a Contractor submits a VECP with similar revisions, the Department will reject the VECP and proceed without any obligation to the Contractor.

6. A VECP will be considered only if reasonable, cost-effective options are not provided in the contract documents.

7. The Department will be the sole judge as to whether a VECP qualifies for consideration and evaluation. It may reject any VECP that requires excessive time or costs for design review, evaluation, and/or investigations. The Department will be the sole judge in determining if the proposed VECP will result in a sufficient amount of direct or indirect cost savings to offset the Department's effort to review the VECP.

8. A VECP shall be consistent with the Department's design policies and basic design criteria, provide the same service life or more, facilitate economy of operations, ease of maintenance, and achieve the desired appearance and safety.

9. A VECP will not be allowed that changes the type and/or thickness of the pavement structure and material, or solely substitutes one material for another. Examples of materials that may fall into this inappropriate substitution situation are drainage pipes, bridge coatings, pavement

markings, etc. The simple elimination of work does not necessarily constitute a VECP, however, a VECP which introduces a simple material substitution, or elimination of work, may be considered if it is accompanied by a design change or change in the construction method. A simple material substitution which introduces a new material to the Department may be also considered.

10. The VECP will not be experimental in nature, but will have been proven to the Department's satisfaction under similar or acceptable conditions on another Department contract or at another location acceptable to the Department.

11. If the Department requires any additional information to evaluate the VECP, this information shall be provided in a timely manner. Unless otherwise mutually agreed upon, failure to do so will result in the rejection of the VECP. An incomplete or a poor quality VECP which hinders the Department's review may also result in the rejection of the VECP.

12. The Contractor shall encourage submissions of VECP from an approved subcontractor, provided that reimbursement is made by the Department to the Contractor and that the terms of payment to the Subcontractor are satisfactorily negotiated and accepted before the VECP is submitted to the Department. Subcontractors may not submit a VECP except through the Contractor.

13. A VECP approved by the Department is considered to be a revision to the contract documents and progress schedule. Consequently, if unsatisfactory results are being achieved or adjustments are necessary during implementation of a VECP, the rejection of work, removal of work, addition of work, or revision of work shall be evaluated in accordance with the Standard Specifications.

14. All contract pay items and quantities referenced in the VECP construction savings analysis shall be Department-approved contract provisions. Any extra work, inclusion of an omission of work, or other field changes shall be authorized prior to use in VECP savings calculations.

15. No work related to a VECP will be performed under force account. Agreed prices must be reached for any contract pay items related to the VECP before the VECP is approved. If the Contractor is deemed to have taken reasonable diligence in determining the work involved but if during the construction of VECP work a significant change in the character of work occurs, the Department may consider new agreed prices.

16. The Contractor will receive written notification from the Department when the VECP is approved. Material orders placed prior to VECP approval shall be submitted at the Contractor's risk.

17. Once a VECP has been approved, the VECP will then be submitted as a change order and processed accordingly. If time sensitive, requests for advanced authorization of extra work in accordance with §104-02 *Changes, Contingencies, Extra Work and Deductions* will be considered, but only after formal VECP approval. The Contractor is responsible for submitting all appropriate information to the Engineer in a timely manner.

E. Payment. If the VECP is accepted by the Department, the changes and payments will be authorized through a change order. Reimbursement to the Contractor will be made as follows:

1. A VECP introduces two individual payments, one for VECP construction savings, and one for VECP design cost. The contract pay item changes along with the VECP construction savings and design cost reimbursements to the Contractor should be submitted in one change order.

2. The Department will pay to the Contractor 50% of the VECP construction savings. The VECP construction savings is the difference between the actual contract costs with the VECP implemented and a detailed estimate of what it would have cost to complete the contract work without implementing the VECP, based on final construction. If final construction savings differs from the amount estimated in the formal VECP, an adjustment may be made and included in another change order. The VECP construction savings reimbursement to the Contractor will not be paid until the VECP work has been completed (progress payments on the completed VECP work are allowed). The Department may withhold all or a portion of the payment for the Contractor's share of the VECP construction savings until the final contract accounting. In the event that at final contract accountings the implementation of VECP actually results in no construction savings, then the Contractor will receive no VECP construction savings payment. The Department is the sole judge in deciding the construction savings due to the implementation of the VECP. The Department will withhold VECP construction savings reimbursement until the Contractor supplies all required VECP documents.

3. If a design cost is submitted for a VECP, the Department will pay to the Contractor a 50% share of the Contractor's reasonable cost for design incurred after conceptual VECP approval. If the design cost submitted for Department approval is deemed unreasonable, only 50% of the design cost deemed to be reasonable will be reimbursed. Not every VECP will have a design cost associated with it. The Department is the sole judge in determining the reasonableness of the design cost. Reimbursable design costs are for engineering changes. Preparation and submission of the proposal (e.g., savings analysis, progress scheduling, etc.) are not considered design costs and are not reimbursable. Reimbursable VECP design may be performed by a consultant or directly by the Contractor. The Contractor shall not be charged for, nor can the Contractor claim, any VECP design performed by the Department.

The design cost shall be submitted as a lump sum item with supporting documentation. The supporting documentation shall include itemized direct salary costs (rates & hours), overhead (only for consultant design), and direct non-salary costs. Payment for direct salary costs and overhead will be limited to the current Department reimbursement policies for Consultant Engineering agreements.

For consultant design, reasonable overhead on the direct technical salaries will be reimbursed. For Contractor design, overhead is not reimbursable for direct salary costs. Overhead shall not be charged for direct non-salary costs whether incurred by the Contractor or by a consultant. Payment for direct non-salary costs will be made at actual cost paid. Although for certain direct non-salary costs (lodging, meals, mileage) there are prevailing maximum rates established by the State Comptroller which the reimbursement rates shall not exceed.

The subtotal of direct salary costs, overhead, and direct non-salary costs shall be considered a "professional service fee" and reimbursed in accordance with §109-05B.3. *Service Charges*. A maximum 5% for the Contractor's contract supervision and overhead is allowed, in addition to any overhead submitted for consultant direct salary costs. All design costs are subject to audit.

Additional supporting documentation (receipts, time sheets, etc.) shall be supplied in a timely manner if requested by the Department.

In the case of a formal VECP being jointly submitted with the conceptual VECP, the Department will pay to the Contractor a 50% share of the Contractor's reasonable cost for design specific to the development of the formal VECP (nothing toward the conceptual VECP) if the conceptual VECP is approved.

4. In the event of the Department's conceptual approval of a direct cost savings VECP, and the Contractor is directed to proceed with the VECP implementation steps and final approval is not reached, regardless of whether due to the actions of the Department or the Contractor, 50% of the total reasonable design costs will still be reimbursed to the Contractor. If "advance" written approval was given to proceed with the work, procure materials, and begin fabrication; and rejection occurs, the work and fabrication costs will be reimbursed in accordance with §109-05 *Extra Work and Time Related Compensation*. Only those materials not incorporated and unique to the contract (i.e., not restockable) will be evaluated for payment.

5. There will be no reimbursement for any costs incurred for the conceptual VECP or prior preparations.

6. If more than one VECP is approved for a contract, construction savings and design costs shall be tracked separately for each VECP.

7. When multiple submittals of information for a VECP are required to satisfy the information needs of the conceptual or formal VECP procedure, and contract timing will be negatively impacted before review and subsequent approval can be given by the Department, then the VECP may be rejected. In such cases, there will be no claim by the Contractor for design costs or loss of anticipated savings and/or profits.

8. VECP payments only involve direct savings or costs. Indirect savings or costs (time, user delay, contract delay, etc.) are not included in VECP payment calculations. The calculations of VECP payments are independent from the payments or penalties for contract time related issues. If a VECP revises the progress schedule, the contract milestones upon which time related provisions are based may be affected. Time savings resulting from a VECP may be realized in a time related contract provision. Conversely, if a VECP negatively affects a progress schedule, time related contract provisions may be negatively affected.

F. ***Time Savings.*** The Department will consider proposals that result in time savings and at the same time may increase the cost of the contract. The Department will be the sole judge as to whether the benefits of completing the contract or a phase before the scheduled completion date or milestone offsets any increase in cost. These submittals, while not constituting a Value Engineering Change Proposal, will be reviewed using the VECP approval process. In addition to information required in §104-10 B. *Submittal of Conceptual VECP* and §104-10 C. *Submittal of Formal VECP*, the Contractor shall provide the Department the anticipated amount of time to be saved and sufficient information to enable the Department to calculate and evaluate the cost benefit of the savings in user delay. Time savings generated by the VECP may be claimed under an existing time related contract provision. If

the time savings VECP increases the cost of the contract, the additional cost shall not be subtracted from any time related contract provision payments.

G. ***Significant Changes.*** The description of what will be considered a "significant change" associated with a VECP are identified in §104-04 *Significant Changes in the Character of Work*. Once a VECP is approved, any future significant change is no longer based on the original contract bid conditions (quantity, nature or kind of a material involved), but rather on the conditions as adjusted by the VECP (adjusted quantities, anticipated site conditions and materials, etc.). Any item that was identified as a Major Item in the original contract documents is still considered a Major Item, regardless of the change in quantity or price due to the VECP.

All significant changes shall be agreed upon prior to formal VECP approval. If after formal VECP approval, an unforeseen change in the VECP work causes a significant change in the character of work, quantities and prices may be adjusted and the VECP savings shall be adjusted accordingly.

STRUCTURAL DESIGN

Structural design shown on the Drawings is based upon maximum weights for major items or equipment as indicated on the Drawings. If the equipment furnished exceeds the weights indicated, Contractor shall assume responsibility for all costs and expenses of redesign and for any construction changes required to accommodate the equipment furnished, including but not limited to all Consultant and Owner engineering expenses in connection therewith.

DIMENSIONS

If any dimensional or space allocations are required to be changed to accommodate equipment furnished by Contractor, all costs and expenses thereof shall be borne by Contractor including without limitation all Consultant and Owner costs and expenses in connection therewith.

MAINTENANCE AND OPERATIONS MANUAL/SPARE PARTS DATA

At a reasonable time before Owner takes beneficial occupancy of the Work, Contractor shall furnish maintenance manuals, warranties, and spare parts data for equipment and materials provided in connection with the Work. Spare parts data shall include: a complete list of parts and supplies, with current unit prices and source of supply; a list of parts and supplies that are normally furnished at no extra cost with the purchase of the equipment; and a list of additional items recommended by the manufacturer to ensure efficient operation for a period of one hundred and twenty (120) days at the particular installation. Maintenance and Operation Manuals which include warranty and spare parts information shall be submitted in accordance with the technical specifications. The foregoing shall not relieve Contractor of any responsibilities under any guaranty required by Contract Documents.

SITE CONDITIONS

SITE INVESTIGATION

Contractor acknowledges that it has satisfied itself as to the nature and location of the Work, the general and local conditions, particularly those bearing upon transportation, disposal, handling, and storage of materials, availability of labor, water, electric power, roads, uncertainties of weather, groundwater table or similar physical conditions at the site, the conformation and condition of the ground, the character, quality and quantity of surface and subsurface materials to be encountered, the

character of equipment and facilities needed prior to and during the prosecution of Work, and all other matters which can in any way affect the Work or the cost or expense thereof under the Agreement. Any failure by Contractor to acquaint itself with all available information concerning the Project will not relieve it from responsibility for properly estimating the difficulty or cost or expense of successfully performing the Work.

PROTECTION OF UNDERGROUND FACILITIES

The Contractor shall use the necessary precautions to prevent damage to pipes, conduits, and other underground facilities in accordance with 16 NYCRR 753 *Protection of Underground Facilities*. All costs associated with verification of the location of underground facilities shall be included in the prices bid for the respective contract items involved unless separate payment is otherwise provided for in the contract. The Contractor shall provide access to Public Service Commission personnel to examine and inspect excavation and demolition methods used within 15 feet in any direction of any underground facility.

Prior to commencement of excavation, the Contractor shall ensure that appropriate staff have completed an approved Public Service Commission "One-Call" training program on safe digging best practices in accordance with New York State General Business Law.

A. ***Excavation.*** Prior to non-emergency excavation for the purpose of movement or removal of earth, rock, pavement or other materials in or on the ground by use of mechanical equipment or blasting, including, but not limited to; digging, auguring, backfilling, boring, drilling, grading, plowing in, pulling in, fence post or pile driving, jack hammering, pipe jacking, pavement milling, tree root removal, sawcutting, trenching, tunneling and the installation of guiderail posts, sign posts, or underground conduit, the Contractor shall notify the One-Call system of the date and location of the proposed work. Excavation does not include the movement of earth by tools manipulated only by human or animal power, vacuum excavation, or saw cutting and jack hammering in connection with pavement restoration of a previous excavation where only the pavement is involved.

B. ***Demolition.*** Prior to the demolition, including; the total or partial wrecking, razing, rending, moving or removal of any structure, the Contractor shall notify the One-Call system of the date and location of the proposed work. At least 7 State work days prior to the start of demolition, the Contractor shall request a pre-demolition conference through the One-Call notification system, with all Utilities that have underground facilities at or within 15 feet of the work area. The pre-demolition conference may encompass one or more demolitions performed as a part of the contract.

C. ***Notification.*** The Contractor shall contact the One-Call notification system serving the area a minimum of 2 days and a maximum of 10 days, not including the date of the call, prior to work. The Contractor shall mark proposed locations of excavation, or other activity listed above, with white paint, white stakes or other indications as agreed to by the Utilities to facilitate the work of underground utility designation. If additional work is required, and staking, marking or other designation has been lost, the Contractor shall contact the One-Call notification system for subsequent designation. If an underground facility has been designated, but the Contractor cannot physically locate the facility, the Utility shall be notified, so that the designation can be verified. If an unmarked or unknown facility is discovered during the course of the Contractor's operations, the Utility or suspected Utility shall be notified. If the owner

cannot be determined, the One-Call notification system shall be notified. The Contractor shall support and protect from damage all exposed underground facilities. The Contractor shall notify the Engineer of any accidental contact with or potential damage to any underground facility, regardless of whether the damage is visible or not.

The Contractor shall provide to the Engineer, in writing, the information provided to the One-Call notification system or the Utility if it is not a One-Call notification system member, and the control number issued for each call placed to request designation of underground facilities. The Contractor shall protect and preserve designations until no longer required for safe work near the underground facility.

The Contractor shall identify and provide to all forepersons and equipment operators, a list of emergency phone numbers for each Utility having facilities within the contract limits. Supervisors shall periodically review the location of underground facilities with all workers who are subject to exposure, including new employees.

D. ***Verification.*** The Contractor shall verify precise location, size, depth and direction of run of an underground facility or its encasement, by hand shovel or vacuum excavation, prior to the use of powered equipment or the installation of any proposed work, including the projected line of a trenchless installation such as boring or drilling, within the tolerance zone. Powered equipment may be used to remove pavement or masonry within the tolerance zone, but only to the depth of such pavement or masonry. Powered equipment shall not be used within 4 inches of the verified location of an underground facility.

E. ***Contact or Damage.*** The Contractor shall, in the event of contact or damage to an underground facility, immediately notify the Utility and the Engineer, suspend excavation or demolition in the immediate vicinity of the contacted or damaged facility and take such emergency actions as are warranted to protect all endangered persons to the best of its ability.

F. ***Quality Level Designations.*** The quality of information gathered about underground utilities is shown on contract plans using a Quality Level Designation. The Quality Level Designation may be different within the same area for different underground utilities, depending on the accuracy and availability of information. If Quality Level Designations are not shown in the contract documents, information shall be assumed to be Quality Level D. Below are the Quality Level Designation definitions:

1. Quality Level A. Quality Level A is the highest degree of accuracy. The information shown on the plans has been obtained by the actual exposure (or verification of previously exposed and surveyed utility facilities) of subsurface utilities, using (typically) minimally intrusive excavation equipment to determine their precise horizontal and vertical positions, as well as their other utility facility attributes. Shown on contract plans as QLA.

2. Quality Level B. Quality Level B is the second highest degree of accuracy. The information shown on the plans has been obtained through the application of appropriate surface geophysical methods (i.e., underground cameras, radar, sonar, tone outs, etc.) to identify the existence and appropriate horizontal position of subsurface utility facilities. Quality Level B data are reproducible by surface geophysics at any point of their depiction. The information was surveyed to applicable tolerances and reduced onto the plans. No excavations were performed. Shown on contract plans as QLB.

3. Quality Level C. Quality Level C is the third highest degree of accuracy. The information shown on the plans has been obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to Quality Level D information. Shown on contract plans as QLC.

4. Quality Level D. Quality Level D is the lowest degree of accuracy. The information shown on the plans was derived solely from existing NYSDOT and/or utility company records or recollections. Shown on contract plans as QLD.

BORINGS AND SUB-SURFACE DATA

a. Contractor may examine the logs of sounding, borings, rock cores, and other subsurface data and samples, if available, by making a request therefor to Owner. Contractor must interpret such information according to its own judgment.

b. If samples are taken in the subsurface explorations, made in connection with the Project, they will be made available for inspection.

SURVEY AND LAYOUT

a. All survey work for construction purposes shall be made by Contractor, at its expense. Contractor shall provide: a licensed surveyor, a professional engineer, or other qualified party, as approved by Owner; competently qualified workers; and all necessary instruments, stakes and other material to perform the Work. Any error, apparent discrepancy, or absence of data required for accurately accomplishing the stake-out survey shall be referred immediately to Owner for interpretation or correction. All surveys shall be closed to known monumentation and datum.

b. Contractor shall be responsible for the accuracy of its Work and shall maintain all reference points, stakes, etc., throughout the life of the Agreement. Damaged, destroyed, or inaccessible reference points, bench marks, or stakes shall be replaced by Contractor. Existing or new control points that are destroyed during construction shall be re-established and all reference ties recorded therefore shall be furnished to Owner.

c. All computations necessary to establish the exact position and location of the Work shall be made and preserved by Contractor. At completion of the Work, the licensed surveyor, professional engineer or other qualified party as approved by Owner, shall furnish a certificate to Owner that the final layout is in conformance with Project plans.

d. Unless otherwise specified by County in writing, all measurements made by Contractor for payment purposes shall be made under the immediate and direct observation of Owner. Any such measurements not made under Owner's supervision or not in accordance with Owner's directions will not be acceptable. One set of all field notes, together with reductions, and certified by the licensed surveyor, professional engineer, or other qualified party shall be furnished to Owner.

e. Consultant may check all or any portion of the Work, and Contractor shall afford all necessary assistance to Owner and Consultant in carrying out such checks. Any necessary corrections to Work shall be immediately made by Contractor. Such checking by Owner shall not relieve Contractor of any responsibility for the accuracy or completeness of its Work.

SUPERINTENDENCE

Contractor shall have present on the work site a qualified and competent superintendent and any necessary assistants, all satisfactory to Owner. In no event shall Work begin prior to Owner's approval of Contractor's superintendent. The superintendent shall not be replaced without the consent of Owner unless the superintendent proves to be unsatisfactory to Contractor and ceases to be in Contractor's employ, or superintendent proves to be unsatisfactory to Owner and Owner directs Contractor to replace said superintendent. The superintendent shall represent Contractor in Contractor's absence and all directions given to the superintendent shall be binding on Contractor. Contractor shall provide sufficient supervision of the Work, using its best skill and attention.

SAFETY AND HEALTH REQUIREMENTS.

The Contractor shall perform all work in the contract with due regard to the safety and health of the employees and of the public. The Contractor shall comply with 29 CFR 1926 *Safety and Health Regulations for Construction*, administered by the Federal Occupational Safety and Health Administration (OSHA); NYS Labor Law and 12 NYCRR regarding the safety and protection of persons employed in construction and demolition work.

The Contractor shall notify the Engineer of any inspections scheduled or conducted on the contract by OSHA, NYS Department of Labor (NYSDOL), or other safety and health agencies, of any resulting closing conference, and provide the Engineer with the opportunity to be present at such inspections and closing conference. The Contractor shall notify the Department in writing of the results of any safety and health inspections conducted by representatives of OSHA, NYSDOL, or other safety and health agencies, within one work day of the completion of the closing conference resulting from such inspections. If any citations are issued for alleged violations of OSHA Regulations, a copy shall be provided to the Engineer within one work day of their receipt by the Contractor, and a copy of the final disposition of such citations shall be provided to the Engineer within one work day of receipt by the Contractor.

G. ***High Visibility Apparel.*** All workers shall wear at all times protective helmets and construction apparel or traffic control apparel when working within a highway right of way or contract limits. High visibility apparel is intended to contrast with the background for worker conspicuity. All high- visibility apparel shall be closed front and rear; in good condition to maintain the color, visibility, reflectivity, and conspicuity. Workers shall include Contractor employees, Subcontractor employees, material suppliers, and other personnel under the direction of the Contractor. Protective helmets and high-visibility apparel are not required for employees when they are within a completely enclosed cab constructed of steel frame and glass, or inside a motor vehicle.

1. ***Protective Helmets.*** Protective helmets shall meet OSHA standards for impact, electrical shock, and burn protection. Protective helmets used during nighttime operations shall be equipped with a minimum of 3 in^2 of reflective tape on all four sides. Protective helmets for flaggers shall be orange.

2. ***Construction Apparel.*** Construction Apparel shall consist of a vest, shirt, or jacket; fluorescent orange-red or fluorescent yellow-green or a combination of these colors meeting the requirements of ANSI 107 Class 2.

3. Traffic Control Apparel. Traffic Control Apparel shall consist of a vest, shirt, or jacket; fluorescent orange-red with fluorescent yellow-green striping bands or fluorescent yellow-green with fluorescent orange-red striping bands, placed both horizontal and vertical, meeting the requirements of ANSI 107 Class 2.

H. Project Safety and Health Plan. The Contractor shall perform all necessary planning, supervision, and training activities to ensure that all of the requirements of 29 CFR 1926 are fully met for all workers employed in the construction of the contract. The Contractor shall provide to the Department prior to the start of work satisfactory evidence that all current requirements of 29 CFR 1926 will be adequately addressed. As a minimum, the Contractor shall provide a written Project Safety and Health Plan which documents the Contractor's company policy relative to safety, and which identifies and addresses specific safety and health concerns to be encountered on the project. Before the work begins and periodically throughout the progress of the work, the Contractor's supervisory staff shall meet with the Engineer to review and discuss the status of safety issues. An appropriate notice shall be posted on the contract site that the Project Safety and Health Plan is available for examination by any worker employed on the project. As a minimum this plan shall include the following items:

- Identification of project and company safety officers.
- Hazardous Materials Communications Plan.
- Employee Safety Training Program.
- Company safety policy.
- Procedures to address project safety and health concerns.
- Procedures to address distraught, emotionally disturbed persons and/or homeless persons.
- Procedures for compelling worker compliance with safety and health requirements, including reasonable suspicion drug and alcohol testing.

Certain of these items may be submitted in the format of a Company Safety and Health Program, with the Project Safety and Health Plan limited to project-specific issues.

The Contractor shall provide to the Department a Project Safety and Health Plan covering all on-site work to be done by each Subcontractor, Owner/Operator and any other party, prior to starting work. As an alternative, the Contractor may provide a certification that all on-site activities performed by and workers employed by each Subcontractor, Owner/Operator and any other party will be subject to the Contractor's Project Safety and Health Plan.

Submission of the required Project Safety and Health Plan by the Contractor and its acceptance by the Department shall not be construed to imply approval of any particular method or sequence for addressing safety and health concerns, or to relieve the Contractor from the responsibility to adequately protect the safety and health of all workers involved in the project as well as any members of the public who are affected by the project.

In accordance with NYS Labor law §220-h, all laborers, workers, and mechanics shall be certified prior to performing any work on a contract over $250,000 as having successfully completed a course in construction safety and health approved by the US Department of Labor's Occupational Safety and Health Administration (OSHA) that is at least ten hours in duration. The Contractor shall attach proof of completion to first certified payroll for initial workers, and to subsequent payrolls for new or additional workers. The Contractor shall clearly indicate on subsequent payrolls any workers not

previously employed on that contract. If no proof of completion has been submitted for a worker listed on a certified payroll, the Engineer will alert the Contractor to this fact. If the Contractor cannot provide proof of completion and the worker continues to work, the Department will notify the Contractor in writing with a copy to the NYSDOL by e-mail at *PWAsk@labor.ny.gov*.

I. ***Emergency Contact Person.*** The Contractor shall designate someone to be available to respond to emergency calls. The name of the person and the telephone number at which he/she can be reached at any time shall be given to the Engineer and all police agencies in the area. Such person shall have full authority and capability to mobilize forces promptly as required to respond to an emergency and protect the public.

J. ***Accident Reporting.*** The Contractor shall immediately notify the Engineer verbally of any accident or incident that results in the death of a worker, motorist or pedestrian or that results in emergency medical attention of a worker. The Contractor shall notify the Engineer in writing within 24 hours, with the details relative to any accident or incident occurring within the contract limits. The Contractor shall also notify the Engineer in writing within 24 hours, with the details relative to any accident or incident that is directly related to construction activity or involving any worker employed on the contract or delivering materials, equipment or supplies to the contract, provided:

- The accident or incident results in the death of a worker, or (2) requires that a worker is hospitalized for treatment of the injury, or (3) results in 3 or more personal injuries or:
- The accident or incident involved a utility (overhead or underground) or:
- The accident or incident involved a motorist or pedestrian or:
- The incident was a near miss as defined by 29 CFR 1926 or:
- The accident otherwise meets the recording requirements of 29 CFR 1904.

The Engineer will provide the Contractor with a copy of the Department accident report for any accident occurring within the contract limits or involving the Contractor's personnel, equipment or operations.

K. ***Imminent Danger and Emergency Actions.*** Any action by the Contractor that presents a potentially imminent danger of injury to the public, a worker, or the inspection staff will be halted immediately by the Engineer, and operations stopped in accordance with §105-01 *Engineer's Authority*. The Contractor's personnel shall have local emergency numbers readily available. These numbers shall include local utility, police/fire and medical assistance. In the event of an emergency, the Contractor shall evacuate all employees and endangered persons from the immediate vicinity to the best of the Contractor's ability.

L. ***Restricted Areas.*** The Contractor shall identify, guard and protect restricted areas such as open and unattended excavations, areas subject to falling debris and other potentially hazardous locations in and adjacent to areas lawfully frequented by any person in accordance with the requirements of 29 CFR 1926 Subpart G. Such protection shall consist of one, or a combination of, the following:

- A substantial fence or barricade, not less than 4 feet in height and mounted on satisfactory supports spaced at intervals of not more than 10 feet. Warning signs reading "DANGER-KEEP OUT" shall be mounted on the fence or barricade at no more than 100 foot intervals. The signs shall be a minimum of 24 inches wide by 16 inches high. The lower portion of the sign shall be white and shall bear the words "KEEP OUT" in 5 inch high black letters. The upper portion shall be

predominantly red with 5 inch high white lettering spelling out the word "DANGER." The lettering shall be enclosed by an approximately elliptical, white ring and the entire sign bordered in black. All barricades and warning signs shall be furnished, erected, relocated, maintained, and removed as required.

- A 4 foot (minimum) extension of the trench sheeting above the ground surface adjacent to an excavation.
- A substantial covering over an excavation. Where it is possible that vehicles will move over such covering, the covering shall be of sufficient strength to withstand the loading.

STORAGE AND HANDLING OF MATERIALS

a. Contractor shall store its equipment and materials at the job site in a manner which conforms to applicable statutes, ordinances, regulations, requirements, rulings or proper public authority, and in a manner which conforms to any Owner directives. Contractor shall not store unnecessary materials or equipment on the job site and shall take care to prevent any structure from being loaded with a weight which will endanger the integrity, security, or safety of the structure or persons. Contractor shall enforce Owner's instructions relating to signs, fire, and smoking.

b. Materials shall not be placed within 30 feet of fire hydrants. Gutters and drainage inlets shall be kept unobstructed at all times. Contractor shall not store materials or encroach upon private property or other contractor's work areas without prior written consent.

PROTECTION OF WORK, MATERIALS, AND EQUIPMENT

During the progress of the Work and up to the date of final acceptance, Contractor shall be solely responsible for the care and protection of all Work. All Work shall be protected against damage or loss from any cause whatsoever and Contractor shall make good any such damage or loss at its own cost and expense. Protective measures shall be subject to the approval of Owner.

INCLEMENT WEATHER

Unless otherwise specifically permitted, all Work that would be subject to damage shall be stopped during inclement, stormy, or freezing weather; only such Work as will not suffer damage is permitted. Contractor shall carefully protect its Work against damage from the weather, and when Work is permitted to proceed during freezing weather, it shall provide and maintain approved facilities for heating the materials and for protecting the Work. If, in County's opinion, any Project work has been damaged or injured by reason of Contractor's failure to adequately protect its Work, such damaged work shall be removed and replaced at Contractor's cost and expense.

PROTECTION OF PROPERTY

a. Contractor shall be responsible for the preservation and protection of property adjacent to the work site against damage or loss as a result of its Work. Any damage or loss occurring on account of any act, omission, or neglect on the part of Contractor shall be restored in a proper and satisfactory manner or replaced by, and at the cost and expense of, Contractor.

b. It is Contractor's responsibility to make itself aware of and comply with such safety regulations as may be required by jurisdictional agencies. Contractor shall at all times conduct its operations so as to avoid and eliminate any unsafe conditions created by its operations.

c. In the event of any claims against Contractor and/or County for Work-related damage or alleged damage to private property, Contractor shall be responsible for all costs and expenses incurred in connection with the settlement of, or defense against, such claims. Prior to commencement of Work in the vicinity of private property Contractor shall, at its own expense, take such surveys as may be necessary to establish the existing conditions and boundaries of the property. Before final payment can be made, Contractor shall furnish satisfactory evidence that all claims for damage have been legally settled, or sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

d. In the event that Contractor has trespassed upon private property in the prosecution of Work, Owner may withhold payment for the value of such damage or alleged damage in or on the property, but in any case not less than a sum of $1,000 for each property trespassed, until Contractor has secured a notarized written release from the property owner upon whose property the trespass was committed, holding Owner harmless.

CLEANING UP

Contractor shall at all times keep the premises and site free from accumulations of waste materials or rubbish caused by its employees or Work, including the employees or work of any of its subcontractors. At the completion of the Work, it shall remove all rubbish so caused from and about the work site, and all temporary structures, tools, scaffolding, surplus materials, supplies, and equipment which it or any of its subcontractors may have used in the performance of Work. In case of dispute, Owner may remove such items and charge the cost of such removal to Contractor, which shall be deducted from any monies owed to Contractor. Any salvaged material not specified to be disposed of otherwise shall become the property of Contractor and shall be removed by Contractor from the site. Owner shall have the right to remove any Contractor-owned items left on Owner's property after the termination date of the Agreement, such removal being at Contractor's expense, and to keep or dispose of such items as it deems appropriate.

INSPECTION OF WORK

a. Owner, Consultant, other representatives of Owner, and representatives of other agencies having jurisdiction may inspect the materials furnished and the Work done during the course of construction, and shall have unrestricted access to all parts of the Work and to all points of manufacture or fabrication of materials and equipment. Contractor shall provide such facilities as are reasonably necessary to carry out the inspection. If witnessed shop tests or inspections are required at the point of manufacture, Contractor shall keep Owner advised as to the progress of the Work so that Owner may arrange for inspection at the proper time and place.

b. If the Specifications, Owner's instructions, ordinances, or any public authority requires any Work to be specially tested or approved, Contractor shall give Owner timely notice of its readiness for inspection and, if the inspection is by an authority other than Owner, of the date fixed for such inspection. If any Work is covered without the approval or consent of Owner, Owner may require such work to be uncovered for examination, then properly restored, at Contractor's cost and expense.

c. At any time during the progress of the Work and up to the date of final acceptance, Owner shall have the right to reject any Work which does not conform to Contract Document requirements, even though such Work has been previously inspected and paid for. Any omissions or failure on the part of Owner to disapprove or reject any Work at the time of inspection shall not be construed as an acceptance of any defective Work, as Contractor remains solely responsible for ensuring that its Work meets the requirements of Contract Documents. If any Work shall be condemned by Owner as defective, or improperly done, such Work shall be removed and replaced, or the defects otherwise remedied, in a manner satisfactory to Owner, and consistent with the intent of the Agreement. All costs and expenses in connection with Contractor's failure to meet Contract Document requirements, including without limitation retesting costs, additional inspection costs, and compensation for Owner's and Consultant's engineering services, will be at the Contractor's expense.

REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK

All work which does not conform to the requirements of the contract shall be considered unacceptable unless otherwise determined acceptable under the provisions in §105-04B *Reasonable Close Conformity with Contract Documents*.

The Department may direct the Contractor to remove any portion of the work performed under this contract for inspection or for any other purpose. If such inspection shows that the work was constructed in accordance with the terms of the contract, payment shall be made to the Contractor for such removal and subsequent replacement at a fair and reasonable price for the work performed. No payment will be made for such removal or for replacement of the work to satisfactory condition if such inspection shows that the work was not constructed in accordance with the contract requirements. No payment will be made for the removal or replacement of any work which may itself be satisfactory, but the removal of which is necessary for the replacement of unsatisfactory work. No payment shall be made in such removal and replacement situations if work was done or materials furnished without inspection by an authorized Department representative.

The above paragraph shall not apply to concrete foundation for pavement or portland cement concrete pavement rejected as a result of core tests. Work so rejected shall be removed and replaced at no additional cost to the State.

All work shall be in satisfactory condition at the time of contract acceptance. Any work done or materials used without inspection by an authorized Department representative may be ordered removed and replaced at the Contractor's expense.

Unacceptable work, whether caused by poor work, defective materials, damage through carelessness or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner irrespective of the presence of, or lack of, a Department Inspector or representative. This clause shall have full effect regardless of the fact that the defective work may have been done or the defective materials used with the full knowledge of the Inspector. The fact that the Inspector or Engineer may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

EEO REPORTING AND MONITORING

CIVIL RIGHTS MONITORING AND REPORTING

The Department approved civil rights reporting software is *Equitable Business Opportunity Solution* (EBO). The EBO software is a web-based system owned and maintained by the Department, and provided to the Contractor at no cost. The Contractor shall use the Department approved civil rights reporting software on all contracts. The Contractor shall enter complete and accurate electronic data to the Department for each month, not later than the 15th of the following month, using EBO. Data shall be current through the end of the last full payroll week for that month, or as otherwise approved by the Engineer to coordinate with contract payment submittals.

A. Civil Rights Officer(s). The Contractor shall designate a Corporate Civil Rights Officer, a Corporate D/M/WBE Representative, and a contract site Equal Employment Opportunity (EEO) Representative; and each Subcontractor shall designate a Corporate Civil Rights Officer, and a contract site Equal Employment Opportunity (EEO) Representative on AAP15 *Designation of Affirmative Action Representatives by Contractors/Subcontractors* in the Department approved civil rights reporting software. The designated individuals shall have the responsibility to and shall be capable of effectively administering and promoting an active program of equal employment opportunity and who shall be assigned adequate authority and responsibility to do so. A single individual may fulfill multiple roles. The Contractor shall update the Department approved civil rights reporting software within 10

calendar days of any changes in these roles.

B. Workforce Participation Plan. At the pre-construction meeting, the Contractor shall submit a *Workforce Participation Plan* covering the Contractor's workforce and the workforce of its Subcontractors with subcontracts over $10,000, together and coordinated with the contract progress schedule, that addresses the Equal Employment Opportunity goals.

The Contractor shall not start work until the Department has reviewed and accepted the *Workforce Participation Plan*. The Contractor shall submit a revised plan when a significant work force build-up or reduction will substantially affect goal attainment, or when a revised schedule is requested by the Department. Such revised *Workforce Participation Plan* must be agreed upon by the Department or the original will remain in effect.

C. Equal Employment Opportunity (EEO) Monitoring and Reporting. The Contractor's compliance with the EEO Requirements will be based on its Employment Utilization, affirmative action steps and its good faith efforts to meet the goals.

The Department, in evaluating the Contractor's good faith efforts to meet the EEO goal(s), will first analyze the Contractor's goal attainment on an individual contract. If the Contractor is not meeting the goal(s) for a single trade or contract, the Department will analyze, progressively, the Contractor's goal attainment on all contracts held by the Contractor within the county, the Region, and/or the State. This method of analysis shall be applied primarily but not solely to contracts with small population numbers. Other factors to be considered include, but are not limited to; the location of the contracts, the relative proximity of the contracts to each other, and the nature of the work.

1. Employee Utilization Data. The Contractor shall submit employee utilization data for its workforce and for each Subcontractor with a subcontract exceeding $10,000 to the Department on a monthly basis, not later than the 15th of the following month. Data shall be submitted showing the total hours for each payroll week, separately through the end of the last full payroll week for that month. A payroll week only partially in a month shall be submitted for the next month. Payroll weeks are determined based on the firm's established payroll end date. Data shall include employee name, gender, ethnicity, and hours worked by trade(s) and classification. Employment utilization percentages are determined using data from the start of work up to and including the month being reported. For the purpose of determining utilization percentages, the hours of female and minority employment are tabulated separately and attainment percentages are calculated separately.

2. Federal-Aid Highway Construction Contractors Annual EEO Report. The Contractor shall submit all required employee utilization data to produce a Form FHWA 1391 *Federal-Aid Highway Construction Contractors Annual EEO Report* to the Department annually not later than August 15th, reflecting the work force during all or any part of the last payroll period worked in July, for all ongoing Federal-Aid contracts. The data shall indicate the number of minority men, minority women, non-minority men, and non-minority women employees currently engaged in each trade.

3. Monthly Training Progress Report. When training is required under §102-11 *Equal Employment Opportunity Requirements* and/or Training Special Provisions, the Contractor

shall submit a monthly training progress report to the Engineer not later than the 15th of each month. In addition to each Monthly Training Progress Report, the Contractor shall provide the Engineer a summary of hours required to complete the various work elements of the training program, hours completed this period, and hours completed to date. This summary shall be provided in sufficient detail to allow the Engineer to determine whether the hours in the previous period are qualified hours under this pay item.

4. Contractor Compliance with EEO Requirements. If the Contractor fails to meet the EEO goal(s) for minorities or women, or demonstrate good faith efforts, the Department may require training of minorities and women to satisfy the employment goals. If the Contractor fails to meet the EEO goal(s), to demonstrate good faith efforts, or is in noncompliance with the nondiscrimination clauses, the Department may suspend additional contract payments in accordance with Article 8 *No Payment on Contractor's Non-Compliance* of the contract agreement, the Contractor may be directed to attend a hearing before the Contract Review Unit, or the Department may follow any other lawful procedure upon due notice in writing to the Contractor, including cancellation, termination, or suspension in whole or in part in accordance with Article 11 *Right to Suspend Work and Cancel Contract* of the contract agreement.

The Contractor may also be referred to the U.S. Department of Labor, Office of Federal Contract Compliance Programs (OFCCP), which has the sole authority to determine compliance with Executive Order 11246 and its implementing regulations. OFCCP may declare the Contractor ineligible for further Federal-Aid contracts in accordance with procedures authorized in Executive Order 11246, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246, or by rule, regulation, or order of the U.S. Secretary of Labor, or as otherwise provided by law.

D. D/M/WBE Monitoring and Reporting. The Contractor shall utilize the D/M/WBEs committed to at pre-award to perform the work or supply materials for which each is listed. The Engineer will monitor the work to ensure that the identified D/M/WBEs perform the work as identified in the Contractor's commitments. Attainments will be measured based on payments made to D/M/WBEs.

If the Contractor has not executed a subcontract with a D/M/WBE before the D/M/WBE is notified of removal of its eligibility by the certifying agency due solely to its having exceeded the size standard, the Contractor may not make commitments to use the firm on the contract as a D/M/WBE, and attainments will not be credited toward the contract goal.

If the Contractor has executed a subcontract with a D/M/WBE before the D/M/WBE is notified of removal of its eligibility by the certifying agency due solely to its having exceeded the size standard, the Contractor may continue to use the D/M/WBE on the contract in accordance with the executed subcontract, and attainments will be credited toward the contract goal. Any new or extra work performed by the ineligible D/M/WBE not covered under the scope of the original executed subcontract will not be credited toward the contract goal.

When a contract is awarded with D/M/WBE commitment(s) that is less than the contract goal(s), the Contractor shall continue good faith efforts. The Contractor shall periodically review items that are available for D/M/WBE participation, typically before the beginning of a new construction season

and when significant new items of work are added to the contract, and conduct additional D/M/WBE solicitation.

If a Contractor, in order to meet the DBE contract goal or other DBE program requirements, uses or attempts to use, on the basis of false, fraudulent or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, a DBE that does meet the eligibility criteria of 49 CFR Subpart D, the U.S. Department of Transportation may initiate suspension or debarment proceedings against that firm under 2 CFR Parts 180 and 1200.

1. Report of Payments to Subcontractors and D/M/WBEs. The Contractor shall enter payment data into EBO for all Subcontractors and for all D/M/WBEs that are due a payment or have received a payment, within 14 days of receipt of payment from the Department, in order to measure D/M/WBE goal attainment and to monitor Contractor compliance with the requirements of §109-07 *Prompt Payments by the Contractor*.

The Subcontractor or D/M/WBE shall acknowledge receipt of payment not later than 7 calendar days after receipt. The date of receipt is: (1) the date the payment was made by electronic transfer to an account identified and agreed to by both parties; (2) the date the envelope containing the payment was date stamped by the U.S. Postal Service; or (3) the date the payment was physically provided to a previously authorized representative of the Subcontractor or D/M/WBE, either by the Contractor or by a delivery service.

The Contractor shall enter the final payment to each Subcontractor or D/M/WBE and designate it as such when the final payment is made, or as a separate $0.00 entry indicating final payment has been made, prior to contract final acceptance, excepting those payments due from work contained in a change order(s) that have not been approved. The Subcontractor or D/M/WBE shall acknowledge receipt of final payment not later than 7 calendar days after receipt or by notification by the Contractor that a separate $0.00 entry indicating final payment was entered in the civil rights reporting software.

2. Monitoring Commercially Useful Function (CUF) by D/M/WBEs. The Contractor shall monitor the work of the D/M/WBEs to ensure each performs a Commercially Useful Function and can be properly counted towards the Contractor's D/M/WBE commitments.

The Department will review the work, services or products provided by each D/M/WBE to verify the performance of a Commercially Useful Function in accordance with §102-12E *Commercially Useful Function*. To determine whether a D/M/WBE has performed a Commercially Useful Function, the Department may also examine similar transactions, particularly those in which D/M/WBEs do not participate.

If the Department determines that some or all of a D/M/WBEs work does not constitute a commercially useful function in accordance with §102-12E. *Commercially Useful Function*, only the portion of the work considered to be a commercially useful function will be credited toward the goal(s).

Upon request, each D/M/WBE Subcontractor shall provide additional documentation to the Engineer for the purposes of monitoring Commercially Useful Function. Such documentation may include, but not be limited to: confirmation that the workforce provided meets the requirements of §102-12E.1. *Work Force*; a copy of purchase order(s) for all material incorporated into the work in order to confirm that the D/M/WBE has met the requirements of

§102-12E.3. *Materials*; and a copy of a rental agreement for all non-owned equipment used to perform the work to the Engineer in order to confirm that the D/M/WBE has met the requirements of §102-12E.4. *Equipment*.

Upon request, the Contractor shall provide a copy of a purchase order(s) for all material, supplies, articles, or equipment provided by a D/M/WBE Manufacturer, Fabricator, or Material Supplier and a copy of a purchase order(s) that details the work product(s) provided from each D/M/WBE Professional Service to the Engineer.

A D/M/WBE may present evidence to rebut a determination by the Department that the D/M/WBE is not performing a commercially useful function. For DBEs, commercially useful function determinations by the Department are subject to review by the Federal Highway Administration (FHWA) but the determination may not be administratively appealed to USDOT. An M/WBE may rebut a determination by the Department that the M/WBE is not performing a commercially useful function to the NYS Department of Economic Development.

3. Revisions to D/M/WBE Participation. The Contractor shall obtain Department approval for substantial revisions in D/M/WBE participation prior to implementing any proposed change through submission of a revised AAP19 *D/M/WBE Schedule of Participation* using the Department approved civil rights reporting software. Unless approval for revision is granted, the

Contractor will not be entitled to any payment for work or material committed to a D/M/WBE unless it is performed or supplied by the approved D/M/WBE.

If the reduction of the D/M/WBE's work or the removal of the D/M/WBE, including for reasons of commercially useful function violations, causes the D/M/WBE participation to fall below the goal(s), the Contractor shall make good faith efforts in accordance with §102-12H. *Good Faith* Efforts to find another D/M/WBE to substitute for the original D/M/WBE to perform at least the remaining amount of work as the D/M/WBE that was terminated, to the extent needed to meet the contract goal(s). Upon request, the Contractor shall provide documentation of good faith efforts within 7 days, which may be extended for an additional 7 days if necessary, at the request of the Contractor. The Department will provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

A D/M/WBE may be substituted if the work committed to the D/M/WBE is deleted or reduced by the Department and enough work remains to substitute an equal commitment amount to the affected D/M/WBE. If not enough work remains, the Department may relieve the Contractor from attaining that portion of the commitments.

The following modifications will be considered a substantial revision in D/M/WBE participation:

- Adding, removing or substituting a D/M/WBE.
- Adding new item(s) of work to a D/M/WBE within a core (3 digit) contract pay item number (i.e. 606 – Guide Railing) not currently approved.
- Significantly reducing the dollar value of or eliminating the D/M/WBE's item(s) of work. Significant reduction will be determined by comparison to the total D/M/WBE contract goal.
- Changes in participation due to major differences between estimated

quantities and actual work performed.

The following modifications will not be considered a substantial revision in D/M/WBE participation:

- Increasing the dollar value of an item(s) of work or adding new item(s) of work within the same core (3 digit) contract pay item number (i.e. 606 – Guide Railing) to a D/M/WBE.
- Substituting similar dollar values of work within a currently approved core (3 digit) contract pay item number (i.e. 606 – Guide Railing).
- Changes in participation due to minor differences between estimated quantities and actual work performed.

a. DBE Program. In accordance with 49 CFR 26.53(f)(1), the Contractor shall not terminate a DBE listed on the approved DBE Participation plan without the prior written consent of the Department. This includes, but is not limited to, instances in which a contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The Department will consent only if the prime contractor has good cause to terminate the DBE firm. Good cause includes, at a minimum, one the following circumstances:

- The listed DBE fails or refuses to execute a written contract;
- The listed DBE fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the Contractor;
- The listed DBE fails or refuses to meet the Contractor's reasonable, nondiscriminatory bond requirements.
- The listed DBE becomes bankrupt, insolvent, or exhibits credit unworthiness;
- The listed DBE is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law;
- The Department has determined that the listed DBE is not a responsible contractor;
- The listed DBE voluntarily withdraws from the project and provides to the Department written notice of its withdrawal;
- The listed DBE is ineligible to receive DBE credit for the type of work required;
- A DBE owner dies or becomes disabled with the result that the listed DBE is unable to complete its work on the contract;
- Other documented good cause that you determine compels the termination of the DBE. Provided, that good cause does not exist if the Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the Contractor can self-perform the work for which the DBE was engaged or so that the Contractor can substitute another DBE or non-DBE contractor after contract award.

Before submitting its request to terminate and/or substitute a DBE to the Department, the Contractor shall give notice in writing to the DBE subcontractor, with a

copy to the Engineer, of its intent to request to terminate and/or substitute, and the reason for the request.

The Contractor shall give the DBE five days to respond to the notice and advise the Department and the Contractor of the reasons, if any, why the DBE objects to the proposed termination of its subcontract and why the Department should not approve the Contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the Department may approve a response period shorter than five days.

b. M/WBE Program. In the cases of substantial reduction, removal or substitution, the Contractor shall provide written justification with a substantive basis for the change. A Contractor's ability to negotiate a more advantageous contract with another Subcontractor will not be considered a valid basis for change.

4. Contractor's Compliance with M/WBE Program Requirements. If the Contractor fails to meet the M/WBE participation commitments, to exert a good faith effort, or otherwise fails to comply with the M/WBE Program requirements, the Department will take further actions.

Such actions may include, but not be limited to, suspension of contract payments in accordance with Article 8 *No Payment on Contractor's Non-Compliance* of the contract agreement; the Contractor may be directed to attend a hearing before the Department's Contract Review Unit; or any other lawful procedure upon due notice in writing to the Contractor, including cancellation, termination, or suspension in whole or in part in accordance with Article 11 *Right to Suspend Work and Cancel Contract* of the contract agreement.

If the Contractor does not meet the M/WBE participation goals, the Contractor will submit to the Engineer a request for a partial or total waiver in accordance with 5 NYCRR 142.7.

a. The Contractor will submit a waiver request documenting such good faith efforts and providing sufficient justification as to why the M/WBE goals should be waived or reduced based upon the following factors: The number and types of certified M/WBEs available to perform on any subcontractable scopes of the contract;
b. The total dollar value of the contract;
c. The contract scope of work to be performed;
d. The project size;
e. The project term;
f. The availability of other business enterprises located in the region qualified to do the work to be performed;
g. The ability of certified M/WBEs located outside the region to perform the contract;
and

h. The extent to which the Contractor's own actions, including but not limited to, any failure by the Contractor to discharge the Contractor's duties pursuant to this Part or Article 15-A of the Executive Law, contributed to the Contractor's inability to meet the maximum feasible portion of the contract goals.

Where the Department determines that the Contractor is not in compliance with the requirements of the Contract and the Contractor refuses to comply with such requirements, or if the Contractor is found to have willfully and intentionally failed to comply with the M/WBE participation goals, the Contractor shall be obligated to pay to the Department Liquidated Damages.

Such Liquidated Damages for failure to meet the M/WBE requirements shall be calculated as an amount equaling the difference between the amount committed to the M/WBEs by the Contractor at award; and the amount actually paid to the M/WBEs for work performed or materials supplied under the Contract, not including any amount for work deleted by the Department.

If a determination has been made which requires the payment of Liquidated Damages and such identified sums have not been withheld by the Department, the Contractor shall pay such Liquidated Damages to the Department within sixty (60) days after they are assessed, unless prior to the expiration of such sixtieth day, the Contractor has filed a complaint with the Director of the Division of Minority and Woman Business Development pursuant to Subdivision 8 of Section 313 of the Executive Law in which event the Liquidated Damages shall be payable if Director renders a decision in favor of the Department.

The Department may file a complaint with the NYS Department of Economic Development, Division of Minority and Women's Business Development pursuant to Executive Law Article 15-A, or other sanctions may also be imposed and remedies invoked as provided under the authority of Executive Law Article 15A, 5 NYCRR 140-145, or by rule, regulation, or order of the Commissioner or as otherwise provided by law.

E. Compliance Reviews. The Department conducts annual civil rights contract compliance reviews of selected Federal-Aid contracts in accordance with 23 CFR 230.409. A compliance review consists of a thorough review of all civil rights contract requirements, including Nondiscrimination in Labor/Employment, EEO, Training, and DBE requirements. A Contractor will typically not be selected for more than one compliance review per year statewide. Based on contract monitoring and/or the results of compliance review(s), the Department may conduct a review of some or all ongoing contracts with a single Contractor, regardless of funding source.

COMPLETION DATE
FAILURE TO COMPLETE WORK ON TIME

For each calendar day, or any portion thereof, that any work remains uncompleted after the contract completion date specified in the contract agreement, Liquidated Damages and/or Engineering Charges from the contract completion date to the final date of completion of the work will be assessed against the Contractor. When specified in the contract documents, Liquidated Damages may also be assessed for each calendar day, or any portion thereof, for failure to complete certain portions of work or for failure to comply with requirements shown in the contract documents, including in-stream or in-water work restriction dates specified by environmental regulatory agencies. Liquidated Damages will be assessed not as a penalty, but as liquidated damages; provided however that due account shall be taken of any adjustment of the contract time for completion of the work as provided for elsewhere in the specifications.

A. Engineering Charges. Engineering Charges include all appropriate engineering and

inspection expenses incurred by the State, its consultants and inspection agencies, and by railroad companies.

Engineering Charges will be assessed in cases where the work has been unduly delayed by the Contractor because of unwarranted reasons, inefficient operation, or for any other reason for which the Department determines the Contractor to be responsible. Reasonable time necessary for reviews of shop drawings by the State or its agents, for changes or additions to the work to meet field conditions which do not significantly affect the scheduled completion of the contract, delays incurred by seasonal and weather limitations, localized labor actions and shortages of supplies or materials, and other situations which should be anticipated are neither compensatory nor eligible for extensions of time without the assessment of Engineering Charges, except as provided for under §108-04 *Delay Provisions*.

Before assessing Engineering Charges, the Department will give due consideration to factors attributing to such delay due to extenuating circumstances beyond the control of the Contractor limited to the following:

1. The work or the presence on the contract site of any third party, including but not limited to that of other contractors or personnel employed by the State, by other public bodies, by railroad, transportation or utility companies or corporations, or by private enterprises, or any delay in progressing such work by any third party except as indicated or disclosed in the contract documents or ordinarily encountered or generally recognized as inherent in the work.
2. The existence of any facility or appurtenance owned, operated, or maintained by any third party, except as indicated or disclosed in the contract documents or ordinarily encountered or generally recognized as inherent in the work.
3. The act, or failure to act, of any public or governmental body, railroad, transportation or utility companies or corporations, including, but not limited to, approvals, permits, restrictions, regulations or ordinances not attributable to a Contractor's submission, action or inaction or Contractor's means and methods of construction.
4. Restraining orders, injunctions, or judgments issued by a court not caused by a Contractor's submission, action or inaction or Contractor's means and methods of construction.
5. Any industry-wide labor boycotts, strikes, picketing or similar situations, as differentiated from jurisdictional disputes or labor actions affecting a single or small group of contractors or suppliers.
6. Any industry-wide shortages of supplies or materials required by the contract work, as differentiated from delays in delivery by a specific or small group of suppliers.
7. Unusually severe storms of extended duration or impact, other than heavy storms or climatic conditions which could generally be anticipated by the bidders, as well as floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides, or other catastrophes.
8. Decisions by the Department to open certain sections of the contract to traffic before the entire work is completed.
9. Significant changes in contract quantities, major extra contract work, delays in the review or issuance of change orders or field change sheets, or delays beyond the established time periods for review and approval for shop drawings, which significantly affect the overall completion of the contract.

10. Failure of the State to provide individual rights-of-way parcels for an extended period of time beyond that indicated by the contract if such unavailability, as determined by the Commissioner, significantly affects the scheduled completion of the contract.
11. Award of the contract by the State more than 45 days beyond the letting date.
12. Situations covered by §104-03 *Differing Site Conditions*, §104-04 *Significant Changes in the Character of Work* and §104-05 *Suspensions of Work Directed by the Engineer*.

B. ***Liquidated Damages.*** Liquidated damages will be in the amount of $1,000 per calendar day, in addition to Engineering Charges as provided for in §108-03A. *Engineering Charges*. Liquidated Damages for special or very large contracts may be specified in the contract proposal.
Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its substantial completion or after the date to which the time for completion may have been extended, will in no way constitute a waiver on the part of the Owner of any of its rights under the contract.

The Contractor is responsible and liable for said liquidated damages even in the event that the Contractor abandons the performance of the contract or the Contractor's employment is terminated pursuant to the provisions of this contract.

DELAY PROVISIONS

A. Compensable Delays. The County may provide monetary compensation for delays and interference in certain defined instances. The Contractor will only be eligible for extra compensation caused by delay or interference affecting the performance or the scheduling of contract work for those instances arising out of:

1. §104-03 *Differing Site Conditions*;
2. §104-04 *Significant Changes in the Character of the Work*;
3. §104-05 *Suspensions of Work Directed by the Engineer*; and
4. Situations not referenced in this paragraph and which are not within the contemplation of the parties at the time of entering into the contract.

These aforementioned provisions may also form the basis for extra work compensation pursuant to §105-14 *Disputed Work and Dispute Resolution* and §109-05 *Extra Work and Time Related Compensation*. Failure of the Contractor to adequately progress completion of the work will be considered in determining whether the aforementioned instances are the primary causes of delay. In all such instances, for any requests made under this subsection, the Contractor shall keep detailed written records of the costs in accordance with *Notice and Recordkeeping*. Any dispute shall be promptly submitted to the Engineer in writing, pursuant to §105-14 *Disputed Work and Dispute Resolution*.

B. ***Non-Compensable Delays.*** The Contractor agrees to make no monetary request for, and has included in its bid prices for the various items of the contract, any extra/additional costs attributable to any delays, inefficiencies or interferences in the performance of the contract caused by or attributable to the items set forth below. The Contractor shall be compensated solely by an extension of time, with or without engineering charges as appropriate, to complete the performance of the work in accordance with the provisions of §108-02 *Completion Date*.

1. The work, or the presence on the contract site, of any third party, including but not limited to personnel or other contractors employed by the State, by other public bodies, by railroad, transportation or utility companies or corporations, or by private

enterprises.
2. Any delay in progressing work by any third party as indicated or disclosed in the contract documents or ordinarily encountered or generally recognized as inherent in the work.
3. The existence of any facility or appurtenance owned, operated, or maintained by any third party, as indicated or disclosed in the contract documents or ordinarily encountered or generally recognized as inherent in the work.
4. The act, or failure to act, of any other public or governmental body, railroad, transportation or utility companies or corporations, including, but not limited to, approvals, permits, restrictions, regulations or ordinances attributable to a Contractor's submission, action or inaction or Contractor's means and method of construction.
5. Restraining orders, injunctions, or judgments issued by a court which were caused by a Contractor's submission, action or inaction or Contractor's means and method of construction.
6. Any labor boycott, strike, picketing or similar situation.
7. Any shortages of supplies of materials required by the contract work.
8. Climatic conditions, storms, floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides, or other catastrophes. However, payment may be made for repairing damage to the work caused by an "occurrence" as provided in §107-09 *Damage*.
9. Extra work which does not significantly affect the overall completion of the contract, delays in the review or issuance of change orders, or field change sheets or delays within the established time periods for review and approval for shop drawings.
10. Any situation which was within the contemplation of the parties at the time of entering into the contract.
11. Award of the contract by the State more than forty-five (45) days beyond the letting date.

ADDITIONAL REQUIREMENTS

MACBRIDE AND OMNIBOUS ACT

MACBRIDE FAIR EMPLOYMENT PRINCIPLES (APPLICABLE ONLY IN NON-FEDERAL AID NEW YORK STATE CONTRACTS). In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either

(a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.

OMNIBUS PROCUREMENT ACT OF 1992 (APPLICABLE ONLY IN NON-FEDERAL AID NEW YORK STATE CONTRACTS). It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts. Information on the availability of New York State subcontractors and suppliers is available from: NYS Department of Economic Development

Division for Small Business Albany, New York 12245 Telephone: 518-292-5100
Fax: 518-292-5884
e-mail: *opa@esd.ny.gov*

A directory of certified minority and women-owned business enterprises is available from:

NYS Department of Economic Development Division of Minority and Women's Business Development

633 Third Avenue New York, NY 10017 212-803-2414

e-mail: *mwbecertification@esd.ny.gov https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp*

The Omnibus Procurement Act of 1992 requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than $1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;

(b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;

(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts and to provide said documentation to the State upon request; and

(d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

102-12 D/M/WBE PARTICIPATION

D/M/WBE is a general term that refers to a Disadvantaged Business Enterprise (DBE), a Minority Business Enterprise (MBE) or a Women's Business Enterprise (WBE). The DBE program applies toFederal-Aid contracts, and the MBE/WBE (M/WBE) program applies to Non-Federal-Aid contracts. The Department seeks to:

- Ensure nondiscrimination in award and administration of Department contracts;
- Create a level playing field on which D/M/WBEs can fairly compete for Department contracts;
- Ensure that the Department's D/M/WBE Program is narrowly tailored in accordance with applicable laws;
- Ensure that only firms that fully meet D/M/WBE eligibility standards are permitted to participate as D/M/WBEs;
- Help remove barriers to the participation of D/M/WBEs in the performance of Department contracts; and
- Assist in the development of firms that can compete successfully in the marketplace outside the D/M/WBE programs.

The parties to this contract shall take all necessary and reasonable steps in accordance with the laws, rules and regulations cited in this subsection to promote the objectives outlined above. The Contractor shall

comply with the applicable laws, rules and regulations and the D/M/WBE Program Assurances stated below.

D/M/WBE Program Assurances. The Contractor or Subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of Department contracts. The Contractor shall carry out the applicable requirements of 49 CFR 26 in the award and administration of Federal-Aid contracts. The Contractor shall carry out the applicable requirements of Article 15A of the New York State Executive Law, and the regulations promulgated thereunder found in 5 NYCRR 140-145, in the award and administration of Non-Federal-Aid contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Department deems appropriate, which may include, but is not limited to: (1) withholding contract payments; (2) assessing sanctions; (3) liquidated damages; and/or (4) disqualifying the Contractor from future bidding as non-responsible. The Contractor shall not use the requirements of these specifications to discriminate against any qualified company or group of companies. These requirements shall be made a part of all subcontracts and agreements entered into as a result of this contract.

A. **Statutory Authority.**

1. Disadvantaged Business Enterprise (DBE) Program. The Federal statutory authority for the DBE Program is contained in the Intermodal Surface Transportation Efficiency Act of 1991 (Public Law 102-240); the Transportation Equity Act of the 21st Century (TEA-21), (Public Law 105-178); the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), (Public Law 109-59); the Moving Ahead for Progress in the 21st Century Act (MAP-21), (Public Law 112-141); and the Fixing America's Surface Transportation (FAST) Act (Public Law 114-94). New York State has enacted Section 85 of the Highway Law and Section 428 of the Transportation Law. Regulations have been promulgated under 49 CFR 21, 49 CFR 26 and 17 NYCRR 35.

2. Minority/Women's Business Enterprise (M/WBE) Program. The State statutory authority for the M/WBE Program is contained in Section 85 of the Highway Law, Section 428 of the Transportation Law, and Executive Law Article 15-A. Regulations have been promulgated under 5 NYCRR 140-145.

B. D/M/WBE Goal(s). Federal-aid contracts have a single DBE goal. Non-Federal-Aid contracts have two separate and distinct goals, one for MBEs and one for WBEs, which cannot be combined. The Department will monitor the Contractor's commitments towards D/M/WBE goals and attainments in accordance with §105-21 *Civil Rights Monitoring and Reporting.*

1. Established Goal(s). Contract participation goal(s) for D/M/WBEs are expressed as a percentage of the total contract price. The goal(s) are stated in the proposal and remain in effect throughout the life of the contract. In executing the contract or bid documents the Bidder declares that it subscribes to the utilization goal(s) and shall meet the goal(s) or demonstrate that it could not meet them despite its best efforts. Failure to provide commitments to meet the established goal(s) for the contract or failure to meet the good faith efforts may be grounds for rejection of the bid as non-responsive.

2. Zero Percent Goal(s). If a zero goal for participation by D/M/WBEs is established, the Contractor shall promote the objectives of the D/M/WBE Programs by providing opportunities for D/M/WBEs to participate in these areas, with such participation to be credited towards the race-neutral component of the Department's D/M/WBE Programs.

C. Eligibility. DBEs are eligible to be used to meet the goal on Federal-Aid contracts. MBEs and

WBEs are eligible to be used to meet the goal on Non-Federal-Aid contracts. The programs are separate, and eligibility in one program does not provide eligibility in the other.

1. DBE Eligibility. Only those DBE firms that are certified under the New York State Unified Certification Program are eligible under the DBE Program. Only the work, services or products provided by DBE Firms under NAICS code(s) which the DBE is certified for, at the time the DBE enters into a contract with the Contractor, can be credited towards the contract goal. DBE certification is not an endorsement of the quality or performance of the business but simply an acknowledgment of the firm's status as a DBE. A directory of certified firms is available on the NYS Unified Certification Program website at *https://nysucp.newnycontracts.com*.

2. M/WBE Eligibility. Only those M/WBE firms that are certified by the NYS Department of Economic Development are eligible under the M/WBE Program. Only the work, services or products provided by M/WBE Firms under code(s) which the M/WBE is certified for, at the time the M/WBE enters into a contract with the Contractor, can be credited towards the contract goal. M/WBE certification is not an endorsement of the quality or performance of the business but simply an acknowledgment of the firm's status as an M/WBE. A directory of certified firms is available on the Empire State Development website at *https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp*.

D. Counting D/M/WBE Participation Towards the D/M/WBE Goal(s). The value of the work performed by a D/M/WBE, including that of a D/M/WBE prime contractor, with its own equipment, with its own forces, and under its own supervision will be counted toward the goal(s), provided the participation is a commercially useful function. A D/M/WBE prime contractor shall still provide opportunities for participation by other D/M/WBEs in all types of contracts and procurement activities. Work performed by D/M/WBEs on the contract will be counted as set forth below. If the Department determines that some or all of a D/M/WBE's work does not constitute a commercially useful function in accordance with §102-12E. *Commercially Useful Function*, only the portion of the work considered to be a commercially useful function will be credited toward the goal(s).

The participation of a firm that is certified as an MBE cannot be counted toward a WBE goal, and the participation of a firm that is certified as a WBE cannot be counted toward an MBE goal. The participation of a firm that is certified as both an MBE and a WBE will only be counted toward one goal, and cannot be divided between the two goals.

A joint venture between a D/M/WBE and a non-D/M/WBE will be counted toward the D/M/WBE goal(s) in proportion to the total dollar value of the contract equal to the distinct, clearly defined portion of the work that the D/M/WBE performs with its own forces. The joint venture agreement is subject to approval by the Department, a copy of which is to be furnished by the Contractor before execution of the contract. The joint venture agreement must include a detailed breakdown of the following:

a. Responsibility of the D/M/WBE for specific contract items of work;
b. Capital participation by the D/M/WBE;
c. Specific equipment to be provided to the joint venture by the D/M/WBE;
d. Specific responsibilities of the D/M/WBE in the control of the joint venture;
e. Specific staffing and skills to be provided to the joint venture by the D/M/WBE; and
f. Percentage distribution to the D/M/WBE of the projected profit or loss by the joint venture.

1. Subcontractors. A Subcontractor is any individual, firm, or corporation to whom the Contractor, with written consent of the Department, sublets any part of the contract. A Subcontractor is approved by the Department in accordance with §108-05 *Subletting or Assigning the Contract* to perform on-site work specifically required for the performance of the contract.

100% of the value of the work performed by a D/M/WBE Subcontractor will be counted toward the D/M/WBE goal(s), including the cost of materials and supplies purchased by the

D/M/WBE, except the cost of supplies or equipment rented or leased from the Contractor or its affiliates will not be counted.

If a D/M/WBE subcontractor is part of a joint venture, their participation will be counted as indicated above in §102-12D. *Counting D/M/WBE Participation Towards the D/M/WBE Goal(s).*

2. Manufacturers/Fabricators. A Manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles or equipment required under the contract and of the general character described by the specifications.

A Fabricator is a firm that assembles, constructs or otherwise substantially alters materials or supplies into assemblies, components, or finished items for inclusion into the work prior to resale.

100% of the cost of the materials or supplies from a D/M/WBE Manufacturer or Fabricator will be counted toward the D/M/WBE goal(s). Manufacturers or Fabricators may provide materials to the Contractor or a Subcontractor working on the contract for installation.

3. Material Suppliers. A Material Supplier, also known as a regular dealer, is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment of the general character described in the specifications required for the performance of the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. A Material Supplier is an established, regular business that engages in, as its principal business, and under its own name, the purchase and sale or lease of the products in question.

60% of the cost of the materials or supplies from a D/M/WBE Material Supplier will be counted toward the D/M/WBE goal(s). Equipment rental or leasing is considered to be a type of material supply activity and is credited at 60%. Material Suppliers may provide materials to the Contractor or a Subcontractor working on the contract for installation. Credit determination awarded to a firm for the provision of materials and supplies (i.e. whether the firm is acting as a material supplier of broker) will be determined on a contract-by-contract basis. If it is determined that the material supplier is acting as a broker, the participation will be credited accordingly.

A Material Supplier who deals in bulk items such as petroleum products, steel, cement, gravel, stone, or asphalt need not own, operate nor maintain a store, warehouse, or other establishment, if it owns and operates distribution equipment for the products. While some items may be drop-shipped due to the specific needs in a contract, the supplier must take legal responsibility for the items at all times. This can be accomplished through delivery with their own trucks, long-term trucking contracts with third party vendors, and/or an insurance policy that covers the items. Any supplementing of Material Suppliers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis.

4. Brokers/Manufacturer's Representatives. A Broker / Manufacturer's Representative is a firm that arranges or expedites transactions for materials.

100% of the expenditures for fees or commissions charged for assistance in the procurement of, or fees for transportation charges for the delivery of, materials or supplies provided by a D/M/WBE Broker/Manufacturer's Representative will be counted toward the D/M/WBE goal(s), provided they are determined by the Department to be reasonable and not excessive as compared with fees customarily allowed for similar services. The cost of the materials and supplies themselves will not be counted. A Broker / Manufacturer's Representative may arrange or expedite transactions for materials to the Contractor or Subcontractor working on the contract.

5. Services. A Service is a firm that provides an economic benefit, such as professional, technical, consultant, or managerial service, or provides bonds or insurance specifically required for the performance of the contract.

100% of the expenditure for fees charged by a D/M/WBE Service will be counted toward the D/M/WBE goal(s), provided the fee is reasonable and not excessive as compared with fees customarily allowed for similar services.

6. Trucking Firms. A D/M/WBE trucking firm shall own and operate at least one fully licensed, insured, and operational truck used on the contract and shall be responsible for the management and supervision of the trucking operation for which it is responsible, and the arrangement cannot be contrived solely for the purpose of meeting the D/M/WBE goal(s). The D/M/WBE trucking firm shall control the day-to-day D/M/WBE trucking operations, and shall be responsible for: (1) Negotiating and executing rental/leasing agreements; (2) Controlling the work force; (3) Coordinating the daily trucking needs with the Contractor or Subcontractor; and (4) Scheduling and dispatching trucks.

a. D/M/WBE Owned/Leased Trucks. 100% of the value of the trucking operations the D/M/WBE provides on the contract using trucks it owns or leases on a long-term basis that are registered, insured, and operated by the D/M/WBE using drivers it employs, will be counted toward the D/M/WBE goal(s). A lease shall indicate that the D/M/WBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the D/M/WBE, so long as the lease gives the D/M/WBE absolute priority for use of the leased truck. Leased trucks shall display the name and identification number of the D/M/WBE.

b. Other D/M/WBE Trucks. The D/M/WBE may obtain trucks from another D/M/WBE, including an owner/operator. 100% of the value of the trucking operations that the other D/M/WBE provides will also be counted toward the D/M/WBE goal(s).

c. Non-D/M/WBE Trucks. The D/M/WBE may obtain trucks from a non-D/M/WBE, including an owner-operator. Only the value of the fee or commission that the D/M/WBE receives as a result of the arrangement with the non-D/M/WBE will be counted toward the D/M/WBE goal(s).

E. Commercially Useful Function. A D/M/WBE's participation will only be counted toward meeting the D/M/WBE contract goal(s), when it performs a commercially useful function. In order to Debe considered as performing a commercially useful function, a D/M/WBE shall be responsible for the execution of a distinct element of work on the contract and carry out its responsibilities by actually performing, managing, and supervising the work involved in accordance with normal industry practice. This applies to all work performed by a D/M/WBE including Subcontractors, Manufacturers/Fabricators, Material Suppliers, Brokers/Manufacturer's Representatives, Services and Trucking Firms.

Regardless of whether an arrangement between the Contractor and the D/M/WBE represent standard industry practice, if the arrangement erodes the ownership, control or independence of the D/M/WBE or in any other way does not meet the commercially useful function requirement, the Contractor will receive no credit toward the goal(s). A D/M/WBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction or contract through which funds are passed in order to obtain the appearance of D/M/WBE participation. The arrangement cannot be contrived solely for the purpose of meeting the D/M/WBE goal(s). The Contractor shall not seek credit toward the goal(s) through any arrangements or actions of others where the Contractor knows, or should have known based upon the evidence and circumstances present, that a D/M/WBE is not performing a commercially useful function.

1. Work Force. The D/M/WBE shall employ a work force, (including administrative and clerical) separate and apart from that employed by the Contractor, other Subcontractors on the contract, or their affiliates. This does not preclude the employment by the D/M/WBE of an individual that has been previously employed by another firm involved in the contract, provided that the individual was

independently recruited by the D/M/WBE in accordance with customary industry practice. The routine transfer of work crews from another employer to the D/M/WBE will not be allowed.

2. Supervision. All work performed by the D/M/WBE shall be controlled and supervised by the D/M/WBE without duplication of supervisory personnel from the Contractor, other Subcontractors on the contract, or their affiliates. This does not preclude routine communication between the supervisory personnel of the D/M/WBE and other supervisors necessary to coordinate the contract work.

3. Materials. D/M/WBE Subcontractors shall negotiate price, determine quality and quantity, order, install (where applicable) and pay for the material(s) required to perform the work when material supply is included in their scope of work.

4. Equipment. D/M/WBE Subcontractors may supplement their equipment by renting or leasing additional equipment in accordance with customary industry practice. A D/M/WBE Subcontractor shall obtain approval of the department prior to renting equipment from the Contractor or its affiliates, and shall provide documentation demonstrating that similar equipment and terms could not be obtained at a lower cost from other customary sources of equipment. The required documentation shall include, but not be limited to, copies of the rental or leasing agreements, and the names, addresses, and terms quoted by other sources of equipment. Equipment a D/M/WBE Subcontractor purchases or leases from the Contractor or its affiliate will not be counted toward meeting the D/M/WBE contract goal(s). Should back charges result in D/M/WBE participation falling below the goal(s), the Contractor shall be required to backfill.

F. Submission of Proposals. In submitting a proposal, a Bidder declares that it shall make commitments to those qualified DBEs whose participation the Bidder submits to meet the contract goal(s).

The bidder shall submit DBEs commitments with its proposal, including DBE name, address, work category, brief description or work, and estimated commitment amount.

G. D/M/WBE Pre-Award Participation Package. Within 5 calendar days after letting for Federal-Aid contracts, or within 10 calendar days for Non-Federal-Aid contracts, the Low Bidder shall submit a complete D/M/WBE Pre-Award Participation Package, as outlined below, to the Office of Construction using the Department approved civil rights reporting software, *Equitable Business Opportunity Solution (EBO)*. The D/M/WBE Pre-Award Participation Package shall include all commitments identified in their proposal at the time of letting. The time period is measured starting the day after the Letting, and if the last day is a Saturday, Sunday, State holiday or Federal holiday, the period is extended to the next day that State offices are open.

A commitment to a D/M/WBE is expressed as a dollar amount agreed to by both the Bidder and the D/M/WBE for the performance of identified work, services or products. Commitments are for quantities of contract pay items, or associated to contract pay items for work, services or products that are not measured in the same manner as the contract pay item. Commitments for less than the full scope of the contract pay item shall be indicated as such in EBO.

For each D/M/WBE Subcontractor, the Apparent Low Bidder shall indicate the contract pay item number(s) of the work to be performed in EBO. For those items of work where the D/M/WBE Subcontractor is performing less than 100% of a contract pay item, the Apparent Low Bidder shall explain, in writing, the scope of work to be performed by the D/M/WBE.

For each D/M/WBE Manufacturer, Fabricator, Material Supplier, or Broker, the Apparent Low Bidder shall indicate the contract pay item number(s) of the materials, supplies, articles, or equipment to be manufactured, fabricated, supplied, or otherwise provided. If the material, supplies, articles, equipment or service does not correspond to a specific contract pay item, the Apparent Low Bidder shall use a contract pay item(s) to which the activity relates.

For each D/M/WBE Service, the Apparent Low Bidder shall indicate the contract pay item number(s) of the service to be provided. If the equipment or service does not correspond to a specific

Department contract pay item, the Apparent Low Bidder shall use a contract pay item(s) to which the activity relates.

For each D/M/WBE Trucking Firm, the Apparent Low Bidder shall indicate the contract pay item number(s) for which the trucking operations are to be performed. If the trucking operation does not correspond to a specific contract pay item, the Apparent Low Bidder shall use a contract pay item(s) to which the activity relates. The Apparent Low Bidder shall indicate the type of trucking operation to be performed, the number of trucks owned/leased, the number of trucks working on-site or off-site, rate per hour/ton/load/etc., duration or amount, and total dollar value of the proposed D/M/WBE commitment. The Apparent Low Bidder shall provide copies of all lease agreements utilized by the D/M/WBE Trucking Firm.

If the Low Bidder meets or exceeds the established D/M/WBE goal(s) for the contract with commitments to certified D/M/WBEs, it is not necessary for the Low Bidder to submit documentation of good faith efforts.

If the contract goal(s) is not met in full, then the Bidder shall provide documentation of its Good Faith Efforts in accordance with §102-12 *Good Faith Efforts* that demonstrate that the Bidder attempted, but could not meet the goal(s).

After contract award, the Contractor shall promptly execute subcontracts, agreements, or purchase orders, as appropriate, with each D/M/WBE for the type and amount of work identified in the approved AAP19 *D/M/WBE Schedule of Participation*.

After the Low Bidder has identified pre-award commitments to D/M/WBEs in EBO, each D/M/WBE shall acknowledge the commitment in EBO within 10 calendar days after letting.

H. Good Faith Efforts. If the Apparent Low Bidder fails to meet the D/M/WBE contract goal(s), the Department will evaluate the good faith efforts the Bidder made to obtain D/M/WBE participation to determine if the efforts are sufficient enough to recommend award of the contract. Efforts to obtain D/M/WBE participation that are merely pro forma are not good faith efforts, nor are efforts that, even if they are sincerely motivated, given all relevant circumstances, they could not reasonably be expected to produce a level of D/M/WBE participation sufficient to meet the goal(s).

If the Low Bidder has not met the D/M/WBE goal(s), it shall submit the AAP10 *D/M/WBE Solicitation Log*, together with other documentation that substantiates good faith efforts. Such documentation shall include, at a minimum, all forms of solicitation inquiries that were returned as undeliverable, quotations submitted by D/M/WBEs that were not selected for participation, quotations submitted by non-D/M/WBEs that were selected for comparison, and an explanation for the Bidder's action in each case.

In order to evaluate the Bidder's good faith efforts, the Department will consider the quality, quantity, and intensity of the different kinds of efforts that the Bidder has made.

Below is a list of the types of actions which the Department will consider as part of the Bidder's good faith efforts to obtain D/M/WBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exhaustive or exclusive. Other factors or types of efforts may be relevant in appropriate cases.

1. Securing participation by certified D/M/WBE firms for work that they are listed to perform that is in the contract. Only DBEs certified by the NYS Unified Certification Program (NYSUCP) shall be used to fulfill the established goal on Federal-Aid contracts. Only M/WBEs certified by the NYS Department of Economic Development shall be used to fulfill the established goal(s) on Non-Federal-Aid contracts.

2. Soliciting, at a minimum, certified D/M/WBEs in the appropriate geographic area:

- For all work, soliciting certified D/M/WBEs within 75 miles of the contract location.

- For trucking operations and equipment rental, soliciting certified D/M/WBEs within 75 miles of the contract location.
- For work such as guide rail, fencing, landscaping, work zone traffic control, survey, signs, permanent highway lighting, traffic signals, and intelligent transportation systems (ITS); soliciting certified D/M/WBEs within 150 miles of the contract location.
- For work such as pavement markings, manufacturers, fabricators, material suppliers, brokers, and services; soliciting certified D/M/WBEs within 300 miles of the contract location, or on an upstate or downstate basis.

3. The Bidder shall conduct market research to identify small business contractors and suppliers and solicit, through all reasonable and available means, the interest of all certified D/M/WBEs that have the capability to perform the work of the contract. This may include attendance at pre- bid and business matchmaking meetings and events; advertising and/or written notices; posting of notices of sources sought and/or requests for proposals, written notices or emails to all certified D/M/WBEs listed in the appropriate directory of certified firms that specialize in the areas of work desired and which are located in the area or surrounding area.

The Bidder shall solicit this interest as early in the bidding process as practicable, to allow the D/M/WBEs to respond to the solicitation and submit a timely offer. The Bidder shall determine with certainty if the D/M/WBEs are interested by taking appropriate steps, including following up the initial solicitation with at least one additional solicitation via a different media. The Bidder shall keep records of efforts to solicit and negotiate with D/M/WBEs as evidence of good faith efforts, using the *Solicitation Log* as a continuing record.

4. Selecting portions of the work to be performed by D/M/WBEs in order to increase the likelihood that the D/M/WBE goal(s) will be achieved. This includes, where appropriate, either breaking down operations or combining like or related operations into logistically and economically feasible units to facilitate D/M/WBE participation, even when the Contractor might prefer to perform these work items with its own forces. This may include, where possible, establishing flexible time frames for performance and delivery schedules in a manner that encourages and facilitates D/M/WBE participation.

5. Providing interested D/M/WBEs with adequate information on where and how to obtain the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation with their timely offer.

6. *a. Negotiating in good faith with interested D/M/WBEs.* It is the Bidder's responsibility to make a portion of the work available to D/M/WBE Subcontractors and material suppliers and to select those portions of the work or material needs consistent with the available D/M/WBE Subcontractors and material suppliers, so as to facilitate D/M/WBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of D/M/WBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for D/M/WBEs to perform the work.

b. Additional Costs. The fact that there may be some additional costs involved in finding and using D/M/WBEs is not in itself sufficient reason for a bidder's failure to meet the contract D/M/WBE goal(s), as long as such costs are reasonable. The ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the Bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from D/M/WBEs if the Department determines the price difference to be excessive or unreasonable.

7. *a. Not rejecting D/M/WBEs as unqualified.* The Bidder shall not reject D/M/WBEs as unqualified without sound reasons based on a thorough investigation of their capabilities. The Bidder's standing within its industry, membership in specific groups, organizations or associations, and political or social affiliations (for example union vs. non-union status) are not legitimate causes for rejection or non-solicitation of proposals in the Bidder's efforts to meet the contract goal. Rejection of the D/M/WBE because its quotation for the work was not the lowest received is not considered good faith effort. Nothing in this paragraph shall be construed to require the Bidder to accept unreasonable quotes in order to satisfy contract goals.

b. Replacement Prices. A prime contractor's inability to find a replacement D/M/WBE at the original price is not alone sufficient to support a finding that good faith efforts have been made to replace the original D/M/WBE. The fact that the contractor has the ability and/or desire to perform the contract work with its own forces does not relieve the contractor of the obligation to make good faith efforts to find a replacement D/M/WBE, and it is not a sound basis for rejecting a prospective replacement D/M/WBE's reasonable quote.

8. Making efforts to assist interested D/M/WBEs in obtaining bonding, lines of credit or insurance as required by the Department or the Bidder.

9. Making efforts to assist interested D/M/WBEs in obtaining necessary equipment, supplies, materials, or related assistance.

10. Where available, effectively using the services of available minority/women focused media, trade associations, and contractor groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of D/M/WBEs.

11. Stating future commitments to use the D/M/WBEs after contract award is not considered to be responsive to the contract solicitation requirements or to constitute good faith efforts.

I. Pre-Award Approval. In order to award a contract to a bidder that has failed to meet the D/M/WBE contract goal(s), the Department must determine that the Bidder's good faith efforts were those that a bidder actively and aggressively seeking to meet the goal(s) would make given all relevant circumstances.

If the Department determines that the original Low Bidder has failed to meet the good faith effort requirements, before awarding the contract to a subsequent bidder, the Department will provide the original Low Bidder an opportunity for administrative reconsideration by an official who did not take part in the original determination.

J. Administrative Reconsideration. The Apparent Low Bidder will have the opportunity to provide written documentation of Good Faith Efforts, or argument and to meet in person with the Department's reconsideration official upon notification concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The Department will send the Low Bidder a written decision on reconsideration, explaining the basis for finding that the Low Bidder did or did not meet the goal or make adequate good faith efforts to do so.

K. Bidder's Compliance with DBE Program Requirements. Applicable only to Federal-Aid contracts.) The Department's acceptance of the Apparent Low Bidder's proposal is conditioned upon the Apparent Low Bidder's fulfillment of the DBE participation requirements. Failure by the Apparent Low Bidder to submit a complete DBE participation package within 5 calendar days after the proposal opening or failure to provide commitments to meet the established goal prior to award without adequate good faith efforts, may be grounds for rejection of the proposal as non-responsive and the bid deposit may be subject to forfeiture pursuant to §103-02 *Execution of Contract.*

L. Bidder's Compliance with M/WBE Program Requirements. (Applicable only to Non-Federal-Aid contracts.) The Department's acceptance of the Low Bidder's proposal is conditioned upon the Low Bidder's fulfillment of the M/WBE participation requirements. Failure by the Low Bidder to submit a complete M/WBE participation package and provide commitments to meet the established goal prior to award, without adequate good faith efforts sufficient to support a goal waiver request, may be grounds for rejection of the proposal as non-responsive and the bid deposit may be subject to forfeiture pursuant to §103-02 *Execution of Contract*.

M. Supplemental Title VI Provisions (Exhibit 1), Minority and Women-Owned Business Enterprises Contract Goals (Exhibit 2) and Goals for Equal Employment Opportunity (EEO) Participation (Exhibit 3) detail these contract requirements.

102-1 LABOR AND EMPLOYMENT

The provisions of NYS Labor Law, as amended, and referred to in §102-08, Standard Clauses for All New York State Contracts, shall be applicable. On contracts financed with Federal-Aid, any provisions of NYS Labor Law that are in conflict with mandatory Federal-Aid construction contract compliance requirements, as contained in 23 CFR 635.117 are superseded. Any provisions of NYS Labor Law that are not in conflict with mandatory Federal-Aid construction contract compliance requirements, or the Davis-Bacon Act, but are more restrictive, shall apply.

The Contractor shall directly employ those members of its own organization. Employee leasing and other similar arrangements under which workers are employed by another organization are not permitted.

No procedures or requirement shall be imposed by any state which will operate to discriminate against the employment of labor from any other state, possession or territory of the United States, in the construction of a Federal-Aid project. The selection of labor to be employed by the Contractor on any Federal-Aid project shall be of its choosing.

The Contractor shall not use convict labor unless performed by convicts who are on parole, supervised release, or probation for construction, maintenance or any other purpose at the site or within the contract limits from the time of contract award until contract final acceptance by the Department.

A. Wages. The Department will identify in the contract proposal whether the NYS Department of Labor (NYSDOL) has determined the work under the contract to be prevailing wage eligible, and if so, the Department will provide the Prevailing Rate Case (PRC) number. The PRC number is found on NYSDOL Form PW-200. The Contractor shall ensure that workers are paid the appropriate wages and supplemental (fringe) benefits. If the contract is prevailing wage eligible, all on-site work shall be paid prevailing wages. When both State and Federal prevailing wages apply, the Contractor shall pay the higher of the combination of the wages and supplemental (fringe) benefits.

The Contractor shall obtain periodic wage rate schedule updates from the NYSDOL. Wage rate amendments and supplements are available on the NYSDOL web site at *https://www.labor.ny.gov/workerprotection/publicwork/PWContents.shtm*. All changes or clarification of labor classification(s) and applicability of prevailing wage rates shall be obtained in writing from the Office of the Director, NYSDOL Bureau of Public Work. The Contractor shall include the cost of changes in prevailing wages and supplemental (fringe) benefits, over the contract duration, in the contract bid prices.

B. Overtime Dispensation. All bidders, in submitting their bids, should base their bids and work progression on the assumption that Overtime Dispensation pursuant to Article 8 of the New York State Labor Law, for any workers, laborers, and mechanics to work more than 8 hours in any one calendar day or more than 5 days in any one week will not be granted for any operation for the contract duration. Regardless of approval or disapproval of overtime by the NYSDOL, no adjustment will be made in any bid prices.

Subsequent to award, where the contract proposal has imposed specific scheduling and/or phasing requirements or where it is determined by the Department to be in the best interest of the public, the Department may process, for approval by the NYSDOL, requests for overtime dispensation on certain specific operations.

The Contractor shall submit requests for overtime dispensation to the Department on Form PW-30, Application for Dispensation for Hours, which will be provided by the Engineer upon request. The Department will review applications for overtime dispensation submitted by the Contractor associated with contracts subject to (A+B) Bidding, Incentive/Disincentive (I/D) or Lane Rental work favorably, but the application should not request more than 60 hours per week. The 60 hours per week may be either 6 - 10 hour days or 5 - 12 hour days. Overtime dispensations will be supported by the Department to advance Department goals and priorities, subject to specific circumstances and conditions associated with each contract.

The Department cannot guarantee that the NYSDOL will grant dispensation from restrictions pursuant to the provisions of Article 8 of the State Labor Law, however with the Department's certification, it is anticipated that they will act favorably, provided that the Contractor is in compliance with Labor Law requirements at the time of application.

C. Payrolls. The Contractor shall provide the Engineer with weekly certified payrolls from each firm engaged in work during the preceding weekly payroll period performed by prevailing wage eligible workers.

Certified payrolls shall contain for each employee, name, race, gender, home address, an individually identifying number (e.g. the last 4 digits of the employee's social security number), work class, hours worked, wage rate, supplemental (fringe) benefits paid or provided, payroll taxes, withholdings and actual wages paid. Certified payrolls shall not include full social security numbers of employees. Certified payrolls shall be submitted on Form WH-347 or Form HC-231-1 for Federal- Aid contracts and on HC-231-1 for non Federal-Aid contracts. At the Contractor's option, other payroll formats which supply the required data and certifications may be used. Each certified payroll submitted shall be accompanied by a Statement of Compliance signed by the Contractor. If the firm does not maintain a place of business in New York State and the amount of the contract exceeds $25,000, payroll records and certifications shall be kept on the worksite.

Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to NYSDOL or USDOL for purposes of an investigation or audit of compliance with prevailing wage requirements. Contractors may require subcontractors to provide addresses and social security numbers to the Contractor for its own records, without weekly submission to the Department.

D. Training. An apprentice is defined as an individual who is enrolled in an apprenticeship training program that is registered with the NYS Department of Labor. A list of approved programs is available from the NYS Department of Labor at
https://www.labor.ny.gov/apprenticeship/appindex.shtm

A trainee is defined as an individual who is enrolled in an On-the-Job Training (OJT) program that is approved by the Federal Highway Administration (FHWA).

A number of sources to obtain training for apprentices/trainees are available. These include:

- A NYSDOL-approved apprenticeship program sponsored by a union or a temporary project level agreement with a union which has a NYSDOL approved apprenticeship program.
- A NYSDOL-approved apprenticeship program sponsored by a contractor.
- A NYSDOL-approved apprenticeship program sponsored by a contractor signatory with an apprenticeship sponsor consortium for certain services.
- An FHWA-approved OJT program (where applicable).

Approved OJT Programs are currently limited to apprenticeable occupations as determined by NYSDOL or USDOL.

Training under Training Special Provisions, if required, will be shown in the contract documents. In order to fulfill training requirements required under Training Special Provisions and/or §102-11 *Equal Employment Opportunity Requirements*, training should begin as early as possible during a construction contract. The Department recommends that all bidders have an approved apprenticeship or OJT program prior to bidding.

The Contractor shall furnish the apprentice/trainee a copy of the program to be followed in providing the training. The Contractor shall provide each apprentice/trainee with a certification showing the type and length of training satisfactorily completed.

When training is required under Training Special Provisions and/or §102-11 *Equal Employment Opportunity Requirements*, the Contractor shall designate to the Engineer, at the preconstruction meeting, a person (or persons) from its existing workforce as the Trainer and Training Coordinator for any apprentice(s)/ trainee(s).

The Trainer shall:

1. Be located on the contract site generally on a daily basis; and
2. Be responsible for the day-to-day supervision and training of persons on the contract; and
3. Be responsible for the preparation and submission of a monthly training progress report, after consultation with designated apprentices/trainees.

The Training Coordinator shall:

1. Be knowledgeable about the contract and the Apprenticeship/OJT programs to be used; and
2. Be responsible for ensuring on-the-job orientation of apprentice/trainees; and
3. Be responsible for ensuring meaningful and effective training for the duration of training.

102-2 EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS.

The Department seeks to ensure nondiscrimination in employment under all Department contracts. The Contractor shall comply with the following Equal Employment Opportunity (EEO) requirements. *Goals for Equal Opportunity Employment Participation* are listed in the required contract provisions section of the contract proposal.

For Federal-Aid contracts, Equal Employment Opportunity provisions are also found on Form FHWA 1273 *Required Contract Provisions Federal-Aid Construction Contracts*, or Form FHWA 1316 *Required Contract Provisions Appalachian Development Highway System and Local Access Roads Construction Contracts*, one of which is incorporated in the required contract provisions section of the contract proposal.

Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

A. Statutory Authority. The Federal statutory authority for Equal Employment Opportunity provisions is contained in 23 U.S.C. 140, Title VII of the Civil Rights Act of 1964, Federal Aid Highway Act of 1968 and Executive Order 11246. State statutory authority is contained in Section 85 of the Highway Law, Section 428 of the Transportation Law, and NYS Executive Law Articles 15 and 15-A, Regulations have been promulgated under 23 CFR 200, 23 CFR 230, 41 CFR 60, 49 CFR 21, and 5 NYCRR 140-145.

B. **Definitions.**

1. For Federal-Aid contracts, a minority group member is defined under this subsection as someone who is, and can demonstrate membership in, one of the following groups:

a. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

b. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

c. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

d. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. For non Federal-Aid contracts, a minority group member is defined under this subsection as a United States citizen or permanent resident alien who is, and can demonstrate membership in, one of the following groups:

a. Black persons having origins in any of the Black African racial groups;
b. Hispanic persons of Mexican, Puerto Rican, Dominican, Cuban, Central or South American descent of either Indian or Hispanic origin, regardless of race;

c. Asian and Pacific Islander persons having origins in any of the Far East countries, South East Asia, the Indian subcontinent, or the Pacific Islands;

d. Native American or Alaskan native persons having origins in any of the original peoples of North America.

C. Equal Opportunity Clause. The Contractor shall develop and implement an EEO policy in accordance with Form FHWA 1273 *Required Contract Provisions Federal-Aid Construction Contracts* for Federal-Aid contracts and in accordance with §102-08 *Standard Clauses for All New York State Contracts* for non Federal-Aid contracts.

1. Non-Discrimination. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

To the extent required by Article 15 of the Executive Law and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor shall not discriminate against any employee or applicant for employment because of military status, predisposing genetic characteristics, marital status, familial status, or domestic violence victim status; and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

Such actions shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Department setting forth the provisions of this non-discrimination clause.

2. Solicitations. The Contractor shall state in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, military status, disability, predisposing genetic characteristics, marital status, or domestic violence victim status.

3. Compensation Information. The Contractor shall not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

4. Collective Bargaining Agreements. The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Contractor's commitments to equal employment opportunities, under the Equal Opportunity Clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5. Executive Order 11246. The Contractor shall comply with all provisions of Federal Executive Order 11246, and of the rules, regulations, and relevant orders of the U.S. Secretary of Labor.

6. Furnishing Information. The Contractor shall furnish all information and reports required by Executive Order 11246 and by rules, regulations, and orders of the U.S. Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Department and the U.S. Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

7. Non-Compliance. In the event of the Contractor's non-compliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246, or by rule, regulation, or order of the U.S. Secretary of Labor, or as otherwise provided by law.

8. Subcontracts/Purchase Orders. The Contractor shall include the provisions of §102-11C *Equal Opportunity Clause* in every subcontract or purchase order, unless exempted by rules, regulations, or orders of the U.S. Secretary of Labor issued pursuant to section 204 of Executive Order 11246, so that such provisions will be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as may be directed by the U.S. Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

D. Employment Goals. An employment goal(s) for minorities and a separate goal for women are presented in the contract documents. The Contractor shall provide equal employment opportunity and shall take affirmative action for all minority groups, both male and female; and women, both minority and non-minority. The covered area is the county or counties in which the work is located. The Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner

(for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

The Contractor shall not use the goals or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, national origin, age, military status, disability, predisposing genetic characteristics, marital status, or domestic violence victim status.

If the Contractor performs work outside of the covered area, it shall apply the goals established for the county where the work is actually performed. The Department will monitor the Contractor's attainments towards EEO goals in accordance with §105-21 *Civil Rights Monitoring and Reporting*.

The goals set for the contract are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress in meeting its goals in each trade.

The hours of minority and female employment and training shall be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its contracts. The transfer of minority or female employees, apprentices, or trainees from contractor to contractor or from contract to contract for the sole purpose of meeting the Contractor's goals is a violation of the contract, the Executive Order and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations.

The Contractor shall not enter into any subcontract with any person or firm debarred from government contracts pursuant to Executive Order 11246.

The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Contractor records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, classification (e.g., supervisor, journeyworker, apprentice, or trainee), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

The Contractor's compliance with the Executive Order and 41 CFR 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by these specifications and its efforts to meet the goals.

E. Affirmative Action Steps. The Contractor shall take specific affirmative actions to promote equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its efforts to ensure equal employment opportunity. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

1. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, shall assign two or more women to each construction contract. The Contractor shall specifically ensure that all forepersons, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

2. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the

Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

3. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

4. Provide immediate written notification to the Department when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

5. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by either the NYS Department of Labor or the US Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under E.2. above.

6. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

7. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, forepersons, etc., prior to the initiation of construction work at any contract site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

8. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other contractors and Subcontractors with whom the Contractor does or anticipates doing business.

9. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

10. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of the Contractor's work force.

11. Validate all tests and other selection requirements in accordance with state and Federal laws, rules

and regulations.

12. Conduct, at least annually, an inventory and evaluation of all minority and female personnel for promotional opportunities. Encourage these employees to seek or to prepare for promotional opportunities through appropriate training, etc.

13. Ensure that seniority practices, labor classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

14. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

15. Document and maintain a record of all solicitations of offers for Subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

16. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

F. Complaints of Alleged Discrimination. The Contractor shall promptly investigate all complaints of alleged discrimination made to the Contractor in connection with its obligations under this contract, shall attempt to resolve such complaints, and shall take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, corrective action shall include such other persons. Upon completion of each investigation, the Contractor shall inform every complainant of all available avenues of appeal.

G. Associations. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations. The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling one or more of its obligations, provided that the Contractor actively participates in the group, makes every effort to ensure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

EXHIBIT 1: SUPPLEMENTAL TITLE VI PROVISIONS (CIVIL RIGHTS ACT)

(To be included in all contracts)

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

(1) Compliance with Regulations: The contractor shall comply with the Regulation relative to nondiscrimination in Federally assisted programs of the Department of Transportation of the United States, Title 49, Code of Federal Regulations, Part 21, and the Federal Highway Administration (hereinafter "FHWA") Title 23, Code of Federal Regulations, Part 200 as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

(2) Nondiscrimination: The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, religion, age, color, sex or national origin, sex, age, and disability/handicap in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by 49 CFR, section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

(3) Solicitations for Subcontractors, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin, sex, age, and disability/handicap.

(4) Information and Reports: The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by NYSDOT or the FHWA to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall so certify to NYSDOT's Office of Civil Rights or FHWA, as appropriate, and shall set forth what efforts it has made to obtain the information.

(5) Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, NYSDOT shall impose such contract sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:

a) Withholding of payments to the contractor under the contract until the contractor complies; and/or
b) Cancellation, termination or suspension of the contract, in whole or in part.

(6) Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

The contractor shall take such action with respect to any subcontractor procurement as NYSDOT or the FHWA may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request NYSDOT to enter into such litigation to protect the interests of NYSDOT, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

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APPENDIX A

STANDARD CLAUSES FOR NEW YORK STATE CONTRACTS

PLEASE RETAIN THIS DOCUMENT
FOR FUTURE REFERENCE.

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STANDARD CLAUSES FOR NYS CONTRACTS

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "the contract" or "this contract") agree to be bound by the following clauses which are hereby made a part of the contract (the word "Contractor" herein refers to any party other than the State, whether a contractor, licenser, licensee, lessor, lessee or any other party):

1. EXECUTORY CLAUSE. In accordance with Section 41 of the State Finance Law, the State shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriated and available for this contract.

2. NON-ASSIGNMENT CLAUSE. In accordance with Section 138 of the State Finance Law, this contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the State's previous written consent, and attempts to do so are null and void. Notwithstanding the foregoing, such prior written consent of an assignment of a contract let pursuant to Article XI of the State Finance Law may be waived at the discretion of the contracting agency and with the concurrence of the State Comptroller where the original contract was subject to the State Comptroller's approval, where the assignment is due to a reorganization, merger or consolidation of the Contractor's business entity or enterprise. The State retains its right to approve an assignment and to require that any Contractor demonstrate its responsibility to do business with the State. The Contractor may, however, assign its right to receive payments without the State's prior written consent unless this contract concerns Certificates of Participation pursuant to Article 5-A of the State Finance Law.

3. COMPTROLLER'S APPROVAL. In accordance with Section 112 of the State Finance Law (or, if this contract is with the State University or City University of New York, Section 355 or Section 6218 of the Education Law), if this contract exceeds $50,000 (or the minimum thresholds agreed to by the Office of the State Comptroller for certain S.U.N.Y. and C.U.N.Y. contracts), or if this is an amendment for any amount to a contract which, as so amended, exceeds said statutory amount, or if, by this contract, the State agrees to give something other than money when the value or reasonably estimated value of such consideration exceeds
$10,000, it shall not be valid, effective or binding upon the State until it has been approved by the State Comptroller and filed in his office. Comptroller's approval of contracts let by the Office of General Services is required when such contracts exceed $85,000 (State Finance Law Section 163.6-a). However, such pre-approval shall not be required for any contract established as a centralized contract through the Office of General Services or for a purchase order or other transaction issued under such centralized contract.

4. WORKERS' COMPENSATION BENEFITS. In accordance with Section 142 of the State Finance Law, this contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this contract for the benefit of such employees as are required to be covered

by the provisions of the Workers' Compensation Law.

5. NON-DISCRIMINATION REQUIREMENTS. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex (including gender identity or expression), national origin, sexual orientation, military status, age, disability, predisposing genetic characteristics, marital status or domestic violence victim status. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin:
(a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of $50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation.

6. WAGE AND HOURS PROVISIONS. If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 thereof, neither Contractor's employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the State of any State approved sums due and owing for work done upon the project.

7. NON-COLLUSIVE BIDDING CERTIFICATION. In accordance with Section 139-d of the State Finance Law, if this contract was awarded based upon the submission of bids, Contractor affirms, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further affirms that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered to the State a non- collusive bidding certification on Contractor's behalf.

8. INTERNATIONAL BOYCOTT PROHIBITION. In accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds

$5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Sections 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2NYCRR 105.4).

9. SET-OFF RIGHTS. The State shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's option to withhold for the purposes of set-off any moneys due to the Contractor under this contract up to any amounts due and owing to the State with regard to this contract, any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to the State for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties relative thereto. The State shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State agency, its representatives, or the State Comptroller.

10. RECORDS. The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance under this contract (hereinafter, collectively, "the Records"). The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General and any other person or entity authorized to conduct an examination, as well as the agency or agencies involved in this contract, shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. The State shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform an appropriate State official, in writing, that said records should not be disclosed; and (ii) said records shall be sufficiently identified; and (iii) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the State's right to discovery in any pending or future litigation.

11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION. (a) Identification Number(s). Every invoice or New York State Claim for Payment submitted to a New York State agency by a payee, for payment for the sale of goods or services or for transactions (e.g., leases, easements, licenses, etc.) related to real or personal property must include the payee's identification number. The number is any or all of the following: (i) the payee's Federal employer identification number, (ii) the payee's Federal social security number, and/or

(iii) the payee's Vendor Identification Number assigned by the Statewide Financial System. Failure to include such number or numbers may delay payment. Where the payee does not have such number

or numbers, the payee, on its invoice or Claim for Payment, must give the reason or reasons why the payee does not have such number or numbers.

(b) Privacy Notification. (1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the State is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (2) The personal information is requested by the purchasing unit of the agency contracting to purchase the goods or services or lease the real or personal property covered by this contract or lease. The information is maintained in the Statewide Financial System by the Vendor Management Unit within the Bureau of State Expenditures, Office of the State Comptroller, 110 State Street, Albany, New York 12236.

12. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN. In accordance with Section 312 of the Executive Law and 5 NYCRR 143, if this contract is: (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of $25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the contracting agency; or (ii) a written agreement in excess of $100,000.00 whereby a contracting agency is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; or (iii) a written agreement in excess of $100,000.00 whereby the owner of a State assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project, then the following shall apply and by signing this agreement the Contractor certifies and affirms that it is Contractor's equal employment opportunity policy that:

(a) The Contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts and will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;

(b) at the request of the contracting agency, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein; and

(c) the Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the State contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

Contractor will include the provisions of "a", "b", and "c" above, in every subcontract over $25,000.00 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor. Section 312 does not apply to: (i) work, goods or services unrelated to this contract; or (ii) employment outside New York State. The State shall consider compliance by a contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of this section. The contracting agency shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the contracting agency shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development's Division of Minority and Women's Business Development pertaining hereto.

13. CONFLICTING TERMS. In the event of a conflict between the terms of the contract (including any and all attachments thereto and amendments thereof) and the terms of this Appendix A, the terms of this Appendix A shall control.

14. GOVERNING LAW. This contract shall be governed by the laws of the State of New York except where the Federal supremacy clause requires otherwise.

15. LATE PAYMENT. Timeliness of payment and any interest to be paid to Contractor for late payment shall be governed by Article 11-A of the State Finance Law to the extent required by law.

16. NO ARBITRATION. Disputes involving this contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutorily authorized), but must, instead, be heard in a court of competent jurisdiction of the State of New York.

17. SERVICE OF PROCESS. In addition to the methods of service allowed by the State Civil Practice Law & Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete upon Contractor's actual receipt of process or upon the State's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify the State, in writing, of each and every change of address to which service of process can be made. Service by the State to the last known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete in which to respond.

18. PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS. The Contractor certifies and warrants that all wood products to be used under this contract award will be in accordance with, but not limited

to, the specifications and provisions of Section 165 of the State Finance Law, (Use of Tropical Hardwoods) which prohibits purchase and use of tropical hardwoods, unless specifically exempted, by the State or any governmental agency or political subdivision or public benefit corporation. Qualification for an exemption under this law will be the responsibility of the contractor to establish to meet with the approval of the State. In addition, when any portion of this contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime Contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with specifications and provisions regarding use of tropical hardwoods as detailed in §165 State Finance Law. Any such use must meet with the approval of the State; otherwise, the bid may not be considered responsive. Under bidder certifications, proof of qualification for exemption will be the responsibility of the Contractor to meet with the approval of the State.

19. MACBRIDE FAIR EMPLOYMENT PRINCIPLES. In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either (a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.

20. OMNIBUS PROCUREMENT ACT OF 1992. It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development Division for Small Business

Albany, New York 12245 Telephone: 518-292-5100

Fax: 518-292-5884

email: opa@esd.ny.gov

A directory of certified minority and women-owned business enterprises is available from:

NYS Department of Economic Development

Division of Minority and Women's Business Development 633 Third Avenue

New York, NY 10017 212-803-2414

email: mwbecertification@esd.ny.gov https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp

The Omnibus Procurement Act of 1992 requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than $1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;

(b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;

(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts and to provide said documentation to the State upon request; and

(d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

21. RECIPROCITY AND SANCTIONS PROVISIONS. Bidders are hereby notified that if their principal place of business is located in a country, nation, province, state or political subdivision that penalizes New York State vendors, and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively) require that they be denied contracts which they would otherwise obtain. NOTE: As of May 15, 2002, the list of discriminatory jurisdictions subject to this provision includes the states of South Carolina, Alaska, West Virginia, Wyoming, Louisiana and Hawaii. Contact NYS Department of Economic Development for a current list of jurisdictions subject to this provision.

22. COMPLIANCE WITH NEW YORK STATE INFORMATION SECURITY BREACH AND NOTIFICATION ACT. Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Section 899-aa; State Technology Law Section 208).

23. COMPLIANCE WITH CONSULTANT DISCLOSURE LAW. If this is a contract for consulting services, defined for purposes of this requirement to include analysis, evaluation, research, training, data processing, computer programming, engineering, environmental, health, and mental health services, accounting, auditing, paralegal, legal or similar services, then, in accordance with Section 163 (4-g) of the State Finance Law (as amended by Chapter 10 of the Laws of 2006), the Contractor shall timely, accurately and properly comply with the requirement to submit an annual employment report for the contract to the agency that awarded the contract, the Department of Civil Service and the State Comptroller.

24. PROCUREMENT LOBBYING. To the extent this agreement is a "procurement contract" as defined by State Finance Law Sections 139-j and 139-k, by signing this agreement the contractor certifies and affirms that all disclosures made in accordance with State Finance Law Sections 139-j and 139-k are complete, true and accurate. In the event such certification is found to be intentionally false or

intentionally incomplete, the State may terminate the agreement by providing written notification to the Contractor in accordance with the terms of the agreement.

25. CERTIFICATION OF REGISTRATION TO COLLECT SALES AND COMPENSATING USE TAX BY CERTAIN STATE CONTRACTORS, AFFILIATES AND SUBCONTRACTORS.

To the extent this agreement is a contract as defined by Tax Law Section 5-a, if the contractor fails to make the certification required by Tax Law Section 5-a or if during the term of the contract, the Department of Taxation and Finance or the covered agency, as defined by Tax Law 5-a, discovers that the certification, made under penalty of perjury, is false, then such failure to file or false certification shall be a material breach of this contract and this contract may be terminated, by providing written notification to the Contractor in accordance with the terms of the agreement, if the covered agency determines that such action is in the best interest of the State.

26. IRAN DIVESTMENT ACT. By entering into this Agreement, Contractor certifies in accordance with State Finance Law §165-a that it is not on the "Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012" ("Prohibited Entities List") posted at: http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

The state agency reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by the State.

During the term of the Contract, should the state agency receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, the state agency will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the state agency shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

The state agency reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or

extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

EXHIBIT 2

APPENDIX B

MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES – EQUAL EMPLOYMENT OPPORTUNITY POLICY STATEMENT

M/WBE AND EEO POLICY STATEMENT

Chautauqua

I, George M. Borrello, the (Municipality/Sponsor/Grantee) County Executive agree to adopt the following policies with respect to the project being developed or services rendered at: Chautauqua County-Dunkirk Airport

M/WBE

This organization will and will cause its contractors and subcontractors to take good faith actions to achieve the M/WBE contract participations goals set by the State for that area in which the State-Funded project is located, by taking the following steps:

(1) Actively and affirmatively solicit bids for contracts and subcontracts from qualified State certified MBEs or WBEs, including solicitations to M/WBE contractor associations.
(2) Request a list of State-certified M/WBEs from AGENCY and solicit bids from them directly.
(3) Ensure that plans, specifications, request for proposals and other documents used to secure bids will be made available in sufficient time for review by prospective M/WBEs.
(4) Where feasible, divide the work into smaller portions to enhanced participations by M/WBEs and encourage the formation of joint venture and other partnerships among M/WBE contractors to enhance their participation.
(5) Document and maintain records of bid solicitation, including those to M/WBEs and the results thereof. The Contractor will also maintain records of actions that its subcontractors have taken toward meeting M/WBE contract participation goals.
(6) Ensure that progress payments to M/WBEs are made on a timely basis so that undue financial hardship is avoided, and that, if legally permissible, bonding and other credit requirements are waived or appropriate alternatives developed to encourage M/WBE participation.

EEO

(a) This organization will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability or marital status, will undertake or continue existing programs of affirmative action to ensure that minority group members are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on state contracts.
(b) This organization shall state in all solicitation or advertisements for employees that in the performance of the State contract all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex disability or marital status.
(c) At the request of the contracting agency, this organization shall request each employment agency, labor union, or authorized representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of this organization's obligations herein.
(d) The Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. The Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.
(e) This organization will include the provisions of sections (a) through (d) of this agreement in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the State contract.

Agreed to this 21st day of November, 2018

By George M Borrello

Print: George M. Borrello Title: County Executive

(09/18)

Becky Anderson is designated as the Minority Business Enterprise Liaison
(Name of Designated Liaison)

responsible for administering the Minority and Women-Owned Business Enterprises- Equal Employment Opportunity (M/WBE-EEO) program.

The Municipality/Sponsor/Grantee agrees that the M/WBE Contract Goals associated with NYSDOT Contract # K007327 are provided below. If the Municipality/Sponsor/Grantee is unable to fulfill the goals provided herein, the Municipality/Sponsor/Grantee must submit a waiver request for a new or modified goal as set forth in Chapter 21 of the NYSDOT Highway Design Manual, available at: https://www.dot.ny.gov/main/business-center/civil-rights/.

M/WBE Contract Goals

___19%_____ percent Minority and Women's Business Enterprise Participation

___9%_____ percent Minority Business Enterprise Participation

___10%_____ percent Women's Business Enterprise Participation

George M Borrello
(Authorized Representative) George M. Borrello

Title: County Executive

Date: 11/21/18

EXHIBIT 3

GOALS FOR EQUAL EMPLOYMENT OPPORTUNITY (EEO) PARTICIPATION

The Contractor shall follow the requirements of §102-11 *Equal Employment Opportunity Requirements*. The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, which is the county or counties in which the work is located, are as follows:

GOALS FOR PARTICIPATION OF MINORITIES					
COUNTY	**%**	**COUNTY**	**%**	**COUNTY**	**%**
Albany	3.2	Herkimer	2.1	Richmond	Table
Allegany	6.3	Jefferson	2.5	Rockland	22.6
Broome	1.1	Kings	Table	St. Lawrence	2.5
Bronx	Table	Lewis	2.5	Saratoga	3.2
Cattaraugus	6.3	Livingston	5.3	Schenectady	3.2
Cayuga	2.5	Madison	3.8	Schoharie	2.6
Chautauqua	6.3	Monroe	5.3	Schuyler	1.2
Chemung	2.2	Montgomery	3.2	Seneca	5.9
Chenango	1.2	Nassau	5.8	Steuben	1.2
Clinton	2.6	New York	Table	Suffolk	5.8
Columbia	2.6	Niagara	7.7	Sullivan	17.0
Cortland	2.5	Oneida	2.1	Tioga	1.1
Delaware	1.2	Onondaga	3.8	Tompkins	1.2
Dutchess	6.4	Ontario	5.3	Ulster	17.0
Erie	7.7	Orange	17.0	Warren	2.6
Essex	2.6	Orleans	5.3	Washington	2.6
Franklin	2.5	Oswego	3.8	Wayne	5.3
Fulton	2.6	Otsego	1.2	Westchester	22.6
Genesee	5.9	Putnam	22.6	Wyoming	6.3
Greene	2.6	Queens	Table	Yates	5.9
Hamilton	2.6	Rensselaer	3.2		

(45 FR 65976 – 10/3/1980)

GOALS FOR PARTICIPATION OF MINORITIES BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND COUNTIES			
Electricians	9.0 to 10.2	Bricklayers	13.4 to 15.5
Carpenters	27.6 to 32.0	Asbestos workers	22.8 to 28.0
Steam fitters	12.2 to 13.5	Roofers	6.3 to 7.5
Metal lathers	24.6 to 25.6	Iron workers (ornamental)	22.4 to 23.0
Painters	26.0 to 28.6	Cement masons	23.0 to 27.0
Operating engineers	25.6 to 26.0	Glaziers	16.0 to 20.0
Plumbers	12.0 to 14.5	Plasterers	15.8 to 18.0
Iron workers (structural)	25.9 to 32.0	Teamsters	22.0 to 22.5
Elevator constructors	5.5 to 6.5	Boilermakers	13.0 to 15.5

		All others	16.4 to 17.5

GOAL FOR PARTICIPATION OF WOMEN

The goal for the participation of women is 6.9%. (43 FR 14888 – 4/7/1978)

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted). If the Contractor performs construction work outside of New York State, it shall apply the goals established for the covered area where the work is actually performed.

SECTION 00 01 15- LIST OF DRAWINGS

GENERAL
G001 - Coversheet
G002 - Notes, Symbols and Abbreviations
G003 - Code Compliance and Life Safety Plan

CIVIL
C101 - Site and Construction Safety Phasing Plans

STRUCTURAL
S001 - General Notes
S002 – 3D Views
S003 – General Schedules
S004 – Special Inspections
S200 – Foundation Plan
S201 - Floor Plan
S202 – PEMB Framing Plan
S300 – Typical Slab-on-grade and Foundation Details
S400 – Foundation Sections (1 of 2)
S401 - Foundation Sections (2 of 2)
S500 – PEMB Sections (1 of 2)
S501 – PEMB Sections (2 of 2)

ARCHITECTURAL
A101 - Floor Plan, Finish and Door Schedules and Plan Details
A102 - Roof Plan, Reflected Ceiling Plan, Details
A201 - Exterior Elevations
A301 - Sections and Details

MECHANICAL
M001 – Mechanical Legend Sheet
M101 - Mechanical Floor Plan and Details
M501 - Mechanical Details

ELECTRICAL
E001 – ELECTRICAL NOTES, SYMBOL LEGEND & ABBREVIATIONS
E002 – ELECTRICAL SPECIFICATIONS
E003 – ELECTRICAL SPECIFICATIONS
E050 – ELECTRICAL SITE PLAN
E101 – POWER & SYSTEMS PLAN
E201 – LIGHTING PLAN
E501 – ELECTRICAL DETAILS

E502 – ELECTRICAL DETAILS
E601 – ELECTRICAL ONE-LINE DIAGRAM & SCHEDULES

PLUMBING
P001 – PLUMBING LEGEND SHEET
P050 – PLUMBING SITE PLAN
P101 – PLUMBING PLAN
P501 – PLUMBING DETAILS
P601 – PLUMBING DETAILS AND SCHEDULES

END OF SECTION

SECTION 00 89 00 - GEOTECHNICAL INVESTIGATION DATA INVESTIGATION

1.01 GEOTECHNICAL INVESTIGATIONS WERE CONDUCTED AT THE SITE AND RESULTS CAN BE FOUND IN REPORT DATED JULY 16, 2021 PREPARED BY:

LABELLA ASSOCIATES

1.02 INTERPRETATION

A. GEOTECHNICAL INVESTIGATION DATA HAS BEEN FURNISHED TO THE ARCHITECT BY OWNER FOR HIS/HER OWN USE IN DESIGNING THE PROJECT. THE OWNER AND ARCHITECT DISCLAIM ANY RESPONSIBILITY FOR THE ACCURACY, TRUE LOCATION AND EXTENT OF THE INVESTIGATION THAT HAS BEEN PREPARED BY OTHERS. THEY FURTHER DISCLAIM RESPONSIBILITY FOR INTERPRETATION OF THAT DATA BY BIDDERS.

B. NEITHER OWNER NOR ARCHITECT WILL BE RESPONSIBLE IN ANY WAY FOR ADDITIONAL COMPENSATION FOR WORK PERFORMED UNDER THE CONTRACT DUE TO CONTRACTORS' ASSUMPTIONS BASED ON GEOTECHNICAL INVESTIGATION DATA.

1.03 GEOTECHNICAL INVESTIGATION DATA IS FOLLOWING THIS PAGE.

END OF SECTION

GEOTECHNICAL SUBSURFACE INVESTIGATION and ENGINEERING REPORT

DUNKIRK AIRPORT HANGAR #3
NORTHEAST OF TERMINAL DRIVE

DUNKIRK, CHAUTAUQUA COUNTY, NEW YORK

Prepared for:
Chautauqua County – Department of Public Facilities, Airport Division
Jamestown Airport
3163 Airport Drive
Jamestown, New York 14701

Prepared by:
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300 Pearl Street, Suite 130
Buffalo, New York 14202

LaBella Project No.: 2191905

July 16, 2021

NOTE

This report is written using **U.S. Customary Units** unless otherwise noted.

The professional services provided in this project include only the specific geotechnical aspects of the subsurface conditions at the site. The presence or implications of possible surface or subsurface contaminants from any source are outside the terms of reference for this geotechnical study and have not been investigated or addressed herein. Coal seam hazard evaluation, fire and gas hazard evaluation, site subsidence hazard evaluation, wetland impact study, septic field hazard or impact evaluation, slope stability and landslide hazard analysis, and a detailed site-specific seismic hazard evaluation are beyond the scope of work for this project.

The subsurface soil profile and design parameters provided in this report are estimated based on the results of the soil borings as indicated by: the boring logs, visual classification of the recovered soil and/or rock samples, geotechnical laboratory results (where applicable), analytical laboratory results (where applicable) and/or generally published soil and/or rock property correlations. Actual subsurface conditions beyond the soil borings and below the depths explored may vary, as well as subsurface conditions encountered in the field during and/or as a result of construction activity. The recommendations contained within this report are based on the subsurface conditions encountered and the anticipated development consisting of a single-story pre-fabricated/pre-engineered metal building hangar. If subsurface conditions or the anticipated improvement vary from those presented within this report, the geotechnical engineer shall be notified immediately to identify if the recommendations provided herein are still applicable.

PRIOR TO CONDUCTING ANY SUBSURFACE EXCAVATIONS, THE CONTRACTOR IS OBLIGATED TO CONTACT THE LOCAL ONE-CALL SERVICE TO MARK OUT UTILITIES. FOR PROJECTS THAT OCCUR ON PRIVATE PROPERTY, THE CONTRACTOR IS OBLIGATED TO HIRE A THIRD PARTY UTILITY LOCATING SERVICE.

Please contact the undersigned Geotechnical Engineer with questions regarding the information provided herein.

This report was prepared by **LaBella Associates, D.P.C.**

Written by:

Andrew Hochreiter, E.I.T.
Geotechnical Engineer
(electronic or copied signature unless in blue ink)

Reviewed by:

Craig T. Bruening, P.E.
Senior Geotechnical Engineer
(electronic or copied signature unless in blue ink)

It is a violation of New York Education Law Article 145 Sec. 7209, and Article 147 Sec. 7307 for any person, unless acting under the direction of a licensed professional engineer, licensed professional geologist, licensed land surveyor, or registered architect to alter an item in any way. If an item bearing the seal of a licensed professional engineer, licensed professional geologist, licensed land surveyor, or registered architect is altered; the individual altering the document shall affix to the item their seal and the notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

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1.0 INTRODUCTION

LaBella Associates, D.P.C. (LaBella) is pleased to present this report for the subsurface exploration and geotechnical engineering evaluation for the planned Dunkirk Airport Hangar as shown on Figure 1 – Site Location Sketch. For this investigation, two Test Borings were advanced at the locations depicted on Figure 2 – Site Location Sketch. The location of the planned improvement is also depicted on Figure 2. Both figures are provided in Appendix A.

Plans for the planned airport hangar:

- Grading of the new area to provide a level platform; and
- Construction of a hangar;

Existing grades within the expansion area range from approximately ±664.0 (south west) to approximately ±665.0 (north east). The proposed finish grade of the expanded hangar is planned to match the existing elevation of the adjacent tarmac and it is anticipated that minor grading of 1-foot of less will be required during construction.

LaBella's Scope of Services included advancing Test Borings, preparing subsurface exploration logs, and preparing this report that contains geotechnical recommendations for the Dunkirk Airport Hangar. These services were performed in accordance with LaBella's proposal. In addition, LaBella previously conducted geotechnical subsurface investigation for the design of an airport hangar to the southwest of the current location. The previous report has been used in the creation of this geotechnical report.

2.0 SUBSURFACE EXPLORATION PROGRAM

The subsurface exploration was performed by LaBella Environmental, LLC (LaBella) on May 19, 2021 by advancing total of two (2) Test Borings at the approximate locations depicted on Figure 2. The Test Borings were advanced using a tracked mounted Geoprobe 6620 DT drill rig equipped with 2-¼" I.D. hollow stem augers and drive sampling tools. Based on the depth at which auger refusal occurred, apparent bedrock was encountered at both Test Boring locations.

Soil Sampling and Standard Penetration Testing (SPT) were conducted using a 140-pound automatic safety hammer dropping 30-inches to drive a 2-inch O.D. split barrel sampler in general conformance with ASTM Standard Practice D1586. The standard penetration resistance (N-Value) is calculated as described on the Boring Log General Information Key in Appendix B. A portion of each soil sample retrieved was placed and sealed in separate glass jars. Upon completion of each Test Boring, the borehole was backfilled with auger cuttings to grade to closely match the existing ground surface. Prior to advancing any subsurface explorations, LaBella Environmental, LLC contacted Dig Safely New York (DSNY) to clear public utilities. In addition, On The Mark Utility Locating Services also used electromagnetic resistivity and ground penetrating radar to identify if underground utilities were present at each boring location. Utility conflicts were not identified at either subsurface exploration location.

Soil samples were logged and visually classified by a LaBella geotechnical engineer. The visual soil classifications were made using a modified Burmister Classification System. In this system the soil is divided into three general categories of Gravel, Sand, Silt/Clay (fines). The predominant fraction is listed first and if it is more than 50-percent or 50% of the matrix the entire word it will be capitalized otherwise the first letter of the fraction is capitalized. Quantifiers are also provided to establish a sense of the percentage of the remaining fractions. LaBella has modified the classification system by NOT using "+" or "-" in the descriptions to further quantify the amount of each fraction. The quantifiers are as follows:

Quantifier	Percentage
trace	1 – 10
little	11 – 20

Quantifier	Percentage
some	21 – 35
and	36 – 50

3.0 SUBSURFACE SOIL AND GROUNDWATER CONDITIONS SUMMARY

The subsurface conditions discussed below have been generalized from the Test Boring Logs provided in this report. The information provided on the Test Boring Logs is representative of the location where each subsurface exploration was conducted. Subsurface conditions between exploration locations and depths sampled may vary. The stratification lines indicated on the logs are approximate and may indicate gradational changes. Please, refer to the attached Test Boring Logs for conditions encountered at the time, location, and depth of each sampling.

3.1 Subsurface Conditions

Surfacings: The surface material at both Test Borings consisted of a thin mantle (a few inches) of brown silty topsoil overlying gravelly Silty SAND soil FILL that extended to depths ranging from 1.5- to 4.0-feet below ground surface (bgs). Based on SPT values, it appears that the Fill material was placed and compacted in a controlled manner and has a medium dense consistency.

Alluvial Deposits: Underlying the surfacings in both borings are Alluvial Deposits. The Alluvial Deposits consist of mottled sandy Silty CLAY that extends to 9.0- and 10.0-feet bgs, where weathered bedrock was encountered. Based on SPT results the consistency of the Alluvial Deposits range from soft to very stiff/ hard.

Weathered Bedrock and Bedrock: Beneath the Alluvial Deposits is completely weathered to moderately weathered bedrock. Depths at which weathered bedrock was encountered range from approximately 9.0 to 10.0-feet bgs. Rock cores were not obtained; however, it is believed that competent bedrock was encountered at depths ranging from approximately 10.0-feet to 14.3-feet bgs where auger refusal occurred.

The weathered bedrock consisted of dark gray aphanitic SHALE in a soil-like state that was medium dense to very dense in consistency based on SPT results. It should be noted that the drill rig was able to advance the 4-1/4" hollow stem augers through the weathered Shale; however, augering was difficult. Rock coring was not part of our scope of work and therefore bedrock core samples were not obtained.

LaBella uses the United States Geologic Survey (USGS) Mineral Resources Online Spatial Data (MROSD) web site to access information with regards to the type of bedrock that underlies the site. According to the USGS-MROSD, the underlying bedrock consists of dark gray Gowanda, South Wales, and Dunkirk Shales that are part of the Canadaway Groups, which is Upper Devonian in age. A summary of the depths at which weathered bedrock was encountered and where auger refusal occurred (apparent competent bedrock) is provided the table below.

Boring Location	Surface Elevation (ft)	Depth to Weathered Bedrock (ft)	Weathered Bedrock Elevation (ft)	Depth to Auger Refusal (ft)	Auger/Excavator Refusal Elevation (ft)
DK-B3	± 665.0	9.0	± 654.0	10.0	± 655.0
DK-B4	± 664.0	10.0	± 654.0	14.3	± 649.7

3.2 Groundwater Conditions

Groundwater was not encountered in the borings during drilling and prior to backfilling the boreholes. However in the previous report of the nearby planned hangar groundwater was encountered at depths of approximately 7-feet bgs. Top of weathered bedrock should be used as the design groundwater depth which is approximately 9-feet bgs and equates to an elevation of approximately ±655-feet.

If groundwater is encountered above the depths listed above, it is anticipated that the use of local sumps and pumps should be adequate to control groundwater fluctuations. If continuous pumping of infiltrating water is required, the pump shall be placed within crushed stone in a sump area that is dug outside of the planned shallow foundation footprint. The crushed stone shall be separated from the subgrade soil with a geotextile fabric (i.e., Mirafi 140N or equivalent) so that continuous pumping of fines (i.e., fine sand, silt) does not occur. Perched or trapped water may be encountered within soil layers of differing gradation, particularly within fill layers.

For spread footing foundations that are installed below the water table, a well point system will most likely be required in order to keep the groundwater surface a minimum of two-feet below the bottom of the deepest footing. Groundwater levels will fluctuate due to seasonal affects and/or construction related activities.

3.3 Expansive Soils and Hydrologic Soil Group

Based on naked-eye visual examination of the retrieved soil and weathered bedrock samples, it is LaBella's professional opinion that potentially expansive materials were not identified at the site; however, it should be noted that the Alluvial Deposits below the Fill can be considered as moisture sensitive and frost susceptible if the material becomes wet.

The United States Department of Agriculture – Natural Resource Conservation Services (USDA-NRCS) Web Soil Survey was used to identify aspects of the surficial soils at the site. The table below provides a summary of surficial soils with regards to Hydrologic Soil Group, Hydric Rating, and the Risk of Corrosion to Concrete and Steel. The entire footprint of the proposed hanger building is underlain by one soil type and therefore a surficial soils sketch is not included in this report. The results are summarized in the table below.

Map Unit Symbol	Map Unit Name	Area (ac.)	Hydrologic Soil Group	Hydric Rating	Risk of Corrosion	
					Concrete	Steel
BrA	Barcelona silt loam, 0 to 3 percent slopes	0.3	C/D	No	Low	High

The "risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete and/or unprotected steel. The rate of corrosion is based mainly on the following characteristics:

- For concrete: Sulfate (SO_4) content, chloride (Cl) content, and acidity (pH);
- For steel: Resistivity/electrical conductivity, reduction/oxidation (Redox) potential, and acidity (pH);
- For concrete & steel: soil moisture content, and grain size distribution

Based on the USDA-NRCS Soil map, LaBella recommends that soil samples be tested for the parameters listed above to identify if some type of special coating or cathodic protection will be required for buried metal items (e.g., utilities).

4.0 SEISMIC CONSIDERATIONS

Based on the subsurface information obtained from the 2 Test Borings advanced for the new Hanger and our knowledge of the local geology, it is our opinion that Site Class C, "Very Dense Soil, Soft Rock", as referenced in the International Building Code as adopted by New York State, may be used for the site. Refer to the Seismic Site Classification Worksheet provided in Appendix C for additional information.

Interpolated probabilistic ground motion parameters for the project site were obtained from the Applied Technology Council (ATC) website using the seismic hazard tool. This tool accesses the United States Geologic Survey (USGS) Seismic Design Maps. Based on the latitude-longitude coordinates of the site, earthquake ground motion parameters were developed in general accordance with the American Society of Civil Engineers (ASCE) 7-16 Standard. Based upon this information, the following ground motion parameters with 2% probability for exceedance, in 50 years, may be used for this site:

- 0.2 second period mapped spectral response acceleration (S_S): 0.119g;
- 1.0 second period mapped spectral response acceleration (S_1): 0.039g;
- MCE spectral response acceleration at short period (S_{MS}): 0.155g;
- MCE spectral response acceleration at 1.0 second period (S_{M1}): 0.059g;
- Five percent damped spectral response acceleration at short period (S_{DS}): 0.103g;
- Five percent damped spectral response acceleration at 1.0 second period (S_{D1}): 0.039g; and
- Peak Ground Acceleration (PGA): 0.062g.

Based on these parameters the Seismic Design Category for this site is A for a Risk Category II Structure. Refer to the ATC Report provided in Appendix C for additional information.

Based upon additional data obtained from the USGS website (2016 Earthquake Probability Mapping) the probability that a magnitude 6.0 earthquake on the Richter scale might occur within 100 years and 50 Km of the project site is less than 1%.

5.0 GEOTECHNICAL RECOMMENDATIONS

The geotechnical evaluations and recommendations contained within this report are based on the subsurface conditions encountered. If subsurface conditions or planned location of the hangar vary from those presented within this report, the geotechnical engineer should be notified immediately to identify if the recommendations provided herein are still applicable.

5.1 Engineering Evaluation

The foundation element that LaBella recommends is shallow foundations bearing at a depth of approximately 6-feet bgs on very stiff to hard Alluvial Deposits or on a layer of **Select Granular Fill** which bears upon the Alluvial Deposits. Based on our review of the adjacent hangar structure, LaBella recommends that isolated shallow spread footings can be used to support the pre-fabricated/pre-engineered single story metal structure.

5.1.1 Shallow Spread Footing Foundations

Based on the existing site grades, it is anticipated that the foundation bearing materials will be approved native Alluvial Deposits. LaBella conducted bearing capacity evaluations for a shallow spread footing founded on 2-feet of **Select Granular Fill** compacted 95% maximum modified density (ASTM D1557) placed on the native Alluvial Deposits to identify an allowable bearing pressure for the new Hangar. In addition to the bearing capacity evaluation, LaBella conducted settlement analysis using the

Schmertmann Method. It is anticipated that most settlement will occur during construction and be elastic based on the consistency of the in-situ soils at the bearing depth.

LaBella modeled a shallow spread footing using the data obtained from the above report sections to identify the bearing capacity for the airport hangar. LaBella anticipates that the bottom of the foundations will be located at a depth of approximately 4 feet bgs which is less than 1.5 times the width of the footing (1.5 x B_f) from the design groundwater surface. Therefore, corrections for ground water (i.e. using the submerged unit weight for the soil column to calculate the Effective Overburden Stress, and a ground water correction factor based on the geometry and modeled depth of the foundation) ARE required to calculate the ultimate bearing capacity. The allowable bearing capacity is subsequently calculated by dividing the ultimate bearing capacity by a factor of safety. The ultimate bearing capacity was calculated using the following bearing capacity formula developed by Terzaghi and modified by Meyerhoff:

$$Q_{ult} = (c \times N_c \times S_c) + (q \times N_q \times S_q) + (0.5 \times \gamma \times b_f \times N_\gamma \times S_\gamma)$$

Where: Q_{ult} = Ultimate Bearing Capacity (psf); c = cohesion (psf);
N_c = cohesive bearing capacity factor = 5.14;
N_q = non-cohesive bearing capacity factor (1 when cohesive soils are encountered);
N_γ = footing bearing capacity factor; S_c, S_q, S_γ = footing shape factors;
q = effective overburden stress (psf); γ = unit weight of soil directly beneath footing (pcf); and
b_f = width of footing (ft)

$$Q_{all} = \frac{Q_{ult} \times GWCF}{FOS}$$

Where: Q_{all} = Allowable Bearing Capacity; GWCF = Groundwater Correction Factor ≤ 1.0; and
FOS = Factor of Safety = 3.0

The shallow spread footings modeled are as follows:

Foundation type	Boring Location	Footing Size	Footing Depth	Allowable Bearing Capacity	Calculated Settlement
Hangar Square Footing	DA-B3 & DA-B4	6' x 6' x 1'	4' on 2' of Select Granular Fill	3,000 psf	<1" <3/4" differential

LaBella recommends that the preparation of the site (e.g., preparing soil bearing grades, installation of Select Granular Fill, etc.) be observed and evaluated by a representative of the geotechnical engineer. The exposed native soil subgrade/bearing grade shall be thoroughly compacted using a manually operated compactor (e.g. vibratory plate or walk behind vibratory roller) prior to placement of Select Granular Fill, and/or reinforcing steel. This should improve the consistency of the exposed grades and re-compact areas that were loosened during excavation activities. The exposed subgrade shall be approved by LaBella's geotechnical representative prior to the placement of Select Granular Fill, forms, and rebar to ensure that the subgrade is consistent with soils that meet or exceed the allowable bearing capacity reported above. The geotechnical representative will also observe the exposed grade to verify that it is free of loose soil, mud, water, frost, and/or deleterious materials.

If unsuitable materials are encountered at the exposed subgrade/bearing grade for the planned foundations, these materials shall be removed by over-excavating and replaced with Select Granular Fill (as described below in this report) compacted to 95% maximum modified density (ASTM D1557). For

every one foot of vertical undercut within a footing excavation, the foundation area shall be widened one foot on all sides of the planned foundation footprint. If Controlled Low-Strength Material (CLSM) is used to fill the over-excavated area, the foundation area shall be widened a minimum of 6 inches on all sides of the planned footing footprint. The design strength for the CLSM should be in the range of 400 to 500 pounds per square inch (psi). Since the anticipated soil bearing materials tend to be moisture sensitive, construction of the foundations should proceed as soon as possible after the acceptance of the soil bearing grade by the geotechnical representative.

The bearing capacity and anticipated settlement provided above are based on preliminary foundation sizes and preliminary loading values. It is anticipated that minor cuts and fills (less than 1-foot) will be required to achieve the desired finished subgrade elevation.

5.1.2 Lateral and Uplift Load Resistance for Shallow Foundations

Shallow foundations for the proposed hangar shall be designed to resist lateral, overturning, and uplift loads. The footings shall be designed for a factor of safety of 2.0 for sustained lateral, overturning, and uplift load conditions or 1.5 for transient lateral, overturning, and uplift load conditions. LaBella also recommends that the resultant of lateral and vertical loading be located within the middle 1/3 of the footing in order to minimize eccentric loading effects.

Passive lateral resistance can be provided by a vertical excavation face if the cast-in-place concrete is poured neat up against the side of the excavation. To increase the uplift resistance for shallow foundations, the foundations can be embedded further below grade with the weight of the foundation in addition to the weight of the soil placed and compacted above the foundation used to resist uplift forces. The volume of soil that can be used is defined by a soil wedge extending out 20 degrees from the vertical edge of the top of the foundation to the ground surface. Passive resistance can be calculated using a passive earth pressure coefficient (k_p) and sliding resistance can be calculated for the subgrade materials and the foundation bottom using an ultimate friction factor of 0.35. The following soil design values may be used to develop the resistive forces.

Material[1]	Effective Friction Angle (ϕ)	Cohesion (c)	Moist Unit Weight (γ_{moist})	Submerged Unit Weight (γ_{sub})	Equivalent Fluid Pressure (EFP)	Earth Pressure Coefficients		
						Active (k_a)	Passive (k_p)	At Rest (k_o)
Select Granular Fill	35°	0 psf	140 pcf	80 pcf	70 pcf	0.27	3.7	0.5
Native Soils	28°	300 pcf	115 pcf	45 pcf	35 pcf	0.36	2.8	0.5

Notes: 1. Values provided are based on each material placed & compacted to a minimum of 95% maximum modified density (ASTM D1557)

5.2 Site Preparation

The first step in preparing the site will be clearing the planned hangar area of the surficial topsoil layer and any foundation elements left behind from any previous improvements that may have been located in this area. The Surfacings of the areas where the planned structure shall be installed is anticipated to consist of granular Fill that was placed in a controlled manner. After the topsoil layer is removed, the underlying Fill shall be proofrolled using a 10-ton smooth drummed roller on vibratory mode on a dry day, free of rain. Proofrolling will consist of five passes over the prepared subgrade at walking speed in a north to south direction followed by five passes in an east to west direction. The proposed hangar area shall be defined as the foot-print of the Hangar plus a 5-foot buffer all around. A representative of the

geotechnical engineer should subsequently observe the subgrade at this stage to evaluate the stability where the new Hanger shall be placed prior to any filling operations and/or excavation of foundations.

If pumping or weaving is observed while proof rolling, the unsuitable soil shall be removed and replaced with Select Granular Fill (as described in this report). Immediately following a satisfactory proofroll, the Contractor shall install Select Granular Fill, to achieve slab subgrade elevation in a quality controlled manner. If the approved subgrade must remain exposed for any length of time, unnecessary trafficking of vehicles across the subgrade shall be avoided. If the subgrade remains exposed overnight and or adverse weather conditions occur subgrade re-inspection should be conducted by the geotechnical representative to determine if additional preparations are necessary.

5.3 Temporary Excavations and Buried Structures

Temporary excavations must be conducted in accordance with the U.S. Department of Labor – Occupational Safety and Health Administration (OSHA) 29 CFR Part 1926 Subpart P titled "Excavations"; and the New York State Code Rules and Regulations (NYCRR) Part 23 titled "Protection in Construction, Demolition and Excavation Operations". OSHA and NYCRR pertain to safety aspects of excavations such as: soil classification, sloping and benching, shoring, and assistance with selecting the appropriate protective system. Prior to workers entering the excavation a Competent Person, as defined by OSHA, must inspect the excavation and deem it safe for entry.

For excavations 5-feet deep and greater, the Contractor will be required to provide excavation protection (e.g., sloping of the side walls, shielding, trench box) and if necessary an Excavation Protection System (EPS) (e.g., shoring, support of excavation). The EPS must be designed by a professional structural or professional geotechnical engineer licensed in the State of New York who is familiar with such systems. The Contractor shall also place excavated spoils no closer to the excavation than the minimum setback distance prescribed by OSHA such that the stability of the excavation and/or EPS is not compromised. In addition, the Contractor should consider installing small berms/swales where necessary to control surface water runoff from entering excavations. The shallow excavations should be able to be made in the proposed structure/equipment pad areas using conventional open-cut methods and standard construction techniques and equipment.

5.4 Frost Depth

According to the local Code Enforcement Office, the minimum burial depth of foundations and/or un-insulated utility lines, including water and sewer pipelines, should not be less than the frost penetration depth of 48 inches or 4.0 feet. Spread footing foundations, pile caps, and utilities that are susceptible to freezing should be placed below this depth or should be protected from frost. Insulation should be provided if pipelines are buried with soil cover less than the frost penetration depth. The insulation should be rigid polystyrene composition (Styrofoam Hi-load 40 or equivalent) and be a minimum of 4-inches in thickness. It is recommended that the minimum depth to the top of the insulation be no less than 1.5-feet below finished grade. Depending upon the insulation properties, additional layers may be required. For pipelines the insulation will extend outwards from the center line of the pipe. The total width of the insulation to be centered over the center line of the pipe can be calculated below.

$$W = [d + (2 \times (F - I))]$$

Where: d = pipe diameter (ft) F = seasonal frost penetration depth (ft)
I = insulation depth below finished grade (ft).

5.5 Uplift Forces due to Adfreezing Stress

An adfreeze upward stress of 0.35 tsf (700 psf) is recommended to be applied to the bottom of any foundation element (e.g., equipment slab-on-grade, spread footing) that is less than 4-feet bgs and a value of 85 psf should be used for the sides of the foundation element that is less than 4-feet bgs. If non-frost susceptible fill material (e.g., Select Granular Fill as described in Section 6.2 of this report) is used, the Adfreeze value of 85 psf for the side of the foundation element can be ignored. In addition, if the bottom of the foundation element is located greater than 4-feet bgs, the Adfreeze value of 700 psf can also be ignored. If the dead load of the foundation element and applied load are less than 700 psf, the foundation element must be modified to withstand this uplift force. Where frost-jacking and transient uplift loads (such as wind loads) occur simultaneously, these two loads need not be considered together, the larger of the two should be used. If the top of the foundation element is greater than 48 inches below finished grade adfreeze stresses can be neglected.

5.6 Floor Slabs

The base material for the floor slab in the area of the new hangar shall be a minimum of 12-inches of Select Granular Fill compacted to 95% of the maximum modified density (ASTM D1557). Prior to the placement of the base material, the subgrade shall be fine graded and proofrolled under the observation of a representative of the geotechnical engineer as described above in this report. Particular attention should be paid to areas where utilities are present and in areas that were subjected to high traffic during construction. The slab-on-grade can be designed based on a Modulus of Subgrade Reaction of 150 psi/in at the top of the subbase layer. The floor slabs should be designed to be independent of the building footings so that the potential for cracking of the slab due to differential movements between the slab and foundations is minimized.

6.0 FILL & BACKFILL

It is the Contractor's responsibility to identify a source of fill material prior to the work beginning. LaBella recommends that the Contractor submit geotechnical laboratory test results a minimum of 3-weeks prior to any of the earth work commencing for the following analysis:

- Moisture Content (ASTM D2216);
- Soil Gradation without Hydrometer (ASTM C117 & C136); and
- Modified Proctor (ASTM D1557).

It is also recommended that the test results be no more than 6-months old and that testing shall be conducted for all sources of fill material the Contractor intends to use during the project. No fill material shall be allowed to be brought on-site until the Geotechnical Engineer has been able to review and comment on the laboratory results.

6.1 On-Site Borrow Material

On-site native soil contains an appreciable amount of Silt and may be re-used as backfill on the outside of the foundation walls of proposed building structures and around isolated spread foundations for the planned Hanger. The on-site soils will be sensitive to moisture, therefore compaction requirements may be difficult to achieve, in which case imported structural fill should be used. Imported structural fill shall be used on the inside of any building foundation walls and in areas where driveways/roadways are planned. If additional passive resistance is needed for the isolated spread foundations, in order to resist overturning or uplift forces, then Select Granular Fill (as described below) will be required.

6.2 Select Granular Fill Material

Structural Fill and Subbase Course Material shall consist of **Select Granular Fill** that shall consist of well-graded sand and gravel, or crushed rock product which is capable of being compacted to the required density at the proper moisture content. **Select Granular FILL** shall be free of deleterious materials, trash, roots, debris, frozen material, organic or other foreign matter. **Select Granular Fill** material shall be accepted based on gradation, plasticity index and a well-defined Moisture-Density Relationship Curve. Plasticity Index for material passing the No. 40 sieve shall not exceed 5.0. Gradation requirements are as provided in the following table.

Standard Sieve Size	% Passing by Dry Weight	
	Run-of-Crush	Screened Gravel
2-inch	100	100
1/4-inch	25 to 60	30 to 65
No. 40	5 to 40	5 to 40
No. 200	0 to 10	0 to 10
Note: Gradation and quality requirements conform to those provided in NYSDOT Standard Specifications Section 304, Type 2 (Run-of-Crush) and Type 4 (Screened Gravel) corresponding to NYSDOT Items 304.12 and 304.14, respectively.		

6.3 Filling & Backfilling Methodology

The exposed grade shall be sealed and proofrolled as described above in this report. All filling and backfilling planned for this project shall be accomplished according to good industry practice and installed in a quality controlled manner with prequalified materials. LaBella recommends that structural tests and inspections be conducted according to the International Building Code as adopted by New York State, and in accordance with the following recommendations:

- The area to receive fill shall be properly prepared and dewatered (where applicable). All backfilling shall be conducted in the dry on completely thawed surfaces on days without precipitation.

- Fill material shall be placed on the satisfactory subgrade to minimize segregation and shall be placed in nearly horizontal lifts. The lowest elevation fill area shall be where fill/backfill operations begins and then proceed with each lift upward and outward from the lower lift.

- The moisture content of the material shall be adjusted prior to application of compaction such that it is within 2% to 3% of the Optimum Moisture Content and may involve adding water when the fill material is too dry, or discing and aerating to reduce moisture when the fill material is too wet.

- The minimum in-place field density and maximum loose lift thickness shall conform to the recommendations provided in the following table:

Minimum In-Place Density[1]	Maximum Compacted Lift Thickness[2]	Location
95%	12 inches	Mass fill areas (e.g., building pads) where self-propelled compaction equipment is used.
95%	8 inches	Confined fill areas (e.g., trenches, foundation walls) when walk-behind compaction equipment is used.

Notes:
1. As determined using ASTM D1557, Modified Effort Proctor.
2. Or compactor manufacturer's recommended thickness, whichever is less.

- When the test results indicate that insufficient compaction has been obtained, the Contractor shall take action to modify or alter the moisture content of the soil, provide additional compaction and/or make other adjustments to increase the in-place soil density. If the Contractor cannot obtain satisfactory compaction due to material properties, the Contractor shall remove the unsatisfactory material and replace with new material.

- Material which is frozen, or includes: mud, debris, organics or other deleterious materials shall be removed and replaced with clean specified material.

- Material shall not be placed over an area or lift of fill that has not been tested and achieved the minimum in-place density requirements.

- A minimum of two compaction tests per 500 square feet shall be performed on each lift of material placed as mass fill areas and a minimum of one test per 20 linear feet per lift placed in confined fill areas.

- Backfilling around buried concrete walls should not begin until the concrete has reached the minimum of 75 percent of the 28-day strength. Heavy rollers and/or compacting equipment should not operate within 2-feet of the structure. Caution should be exercised while placing the backfill to avoid lateral loads induced by the compaction equipment. To avoid differential lateral pressures against walls that were not designed to retain soil, the backfill should be brought up evenly on each side of the wall.

- If inclement weather occurs after achieving acceptable test results, areas subjected to the inclement weather shall be retested to identify if those areas require repair or replacement prior to placing additional fill.

7.0 CONSTRUCTION OBSERVATIONS & TESTING

Special Inspections are required to be performed in accordance with the International Building Code as adopted by New York State. A representative of the geotechnical engineer should be on-site during site preparation activities (e.g., proofrolling), installation of fill, preparation of foundation bearing grades, and any other geotechnical construction related activities. An independent testing lab shall be retained by the owner to perform compaction testing at frequencies noted earlier in this report.

8.0 CLOSING

LaBella has prepared this report for the use by Chautauqua County and the design team exclusively. LaBella's recommendations with regard to the design of the planned hangar are based upon our

understanding of the proposed construction and the information obtained from the subsurface exploration. Variations in the subsurface conditions may occur between Test Boring locations or there may be changes in the planned construction during the design phase. As this may be the case, changes to our recommendations may be warranted.

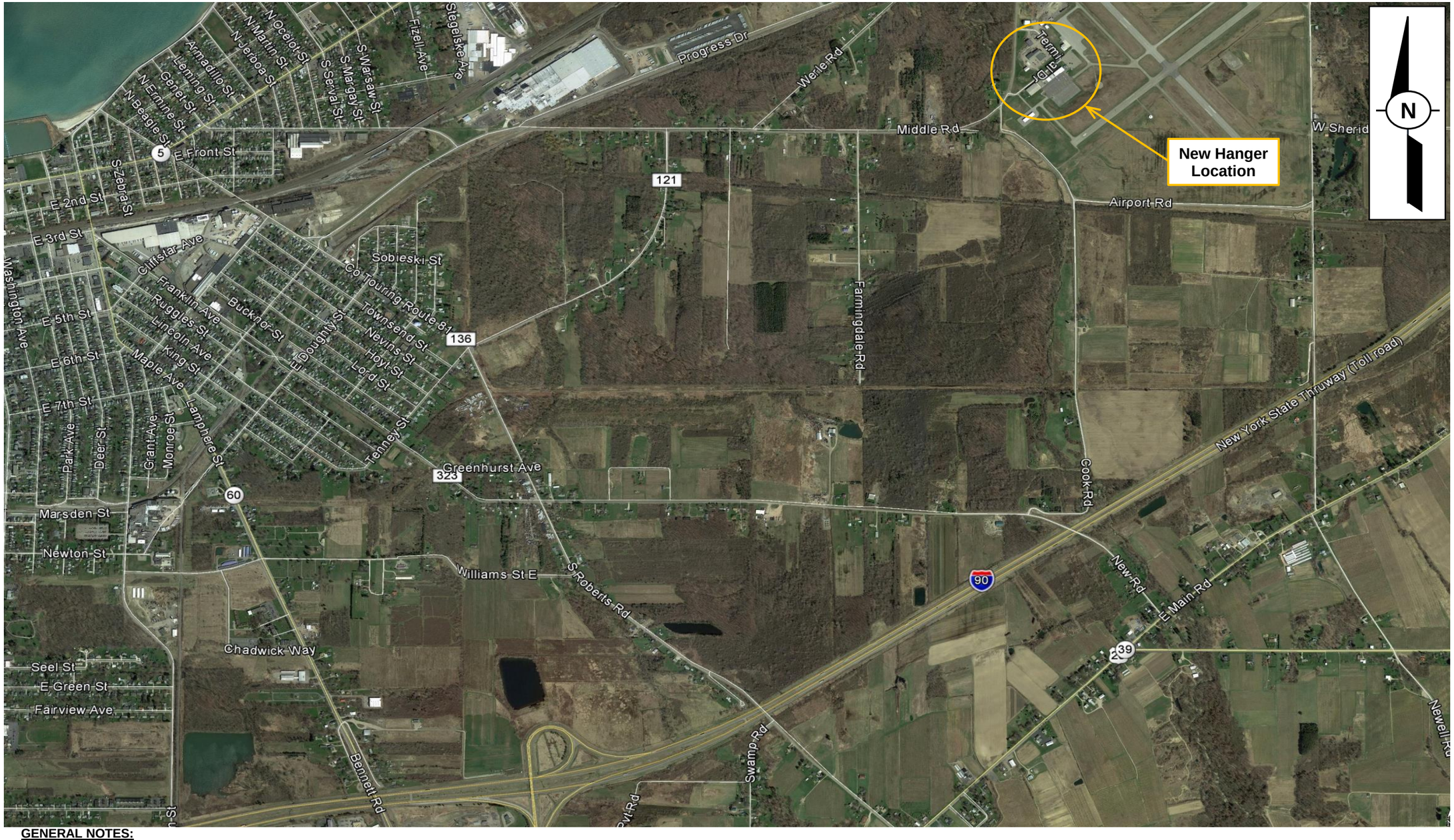
Generally accepted soil mechanics and geotechnical engineering practices were used to develop the recommendations stated in this report. Our services were conducted in a manner that is in accordance with generally accepted geotechnical engineering practice. The geotechnical engineer of record should review the final design plans and specifications to evaluate their consistency with LaBella's recommendations. Prospective bidders should understand that this report was prepared for design purposes only and may not contain sufficient information to prepare an accurate bid. We recommend that LaBella be retained to monitor and observe the bearing grades, and building area subgrades during the construction.

9.0 DISPOSITION OF SAMPLES

LaBella will hold all soil, and rock samples for 90-days after the date of this report. If the Client desires that these samples be retained for a longer period of time the Client shall notify LaBella in writing and make arrangements to obtain the samples from LaBella prior to the expiration of the 90-day time period; otherwise the samples will be properly disposed by LaBella.

APPENDIX A

FIGURES



GENERAL NOTES:

1. AERIAL PHOTOGRAPHY WAS OBTAINED FROM GOOGLE EARTH.
2. THIS FIGURE IS NOT TO BE USED FOR CONSTRUCTION, ESTIMATING, OR CONSTRUCTION LAYOUT PURPOSES.
3. THE DRILLING FIRM IS TO CONTACT DIGSAFELY NY (LOCAL ONE CALL SYSTEM) FOR UTILITY MARKOUT
4. ON THE MARK UTILITY MANAGEMENT SERVICES SHALL CHECK BORING LOCATIONS ON THE DAY THE DRILLING FIRM PLANS TO BEGIN BORINGS.
5. LOCATIONS OF ALL FEATURES ARE APPROXIMATE.
6. FIGURE INTENDED TO BE PRINTED ON 11"X17".

Scale: 1" = 1,500'

1,500 0 1,500

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GEOTECHNICAL SUBSURFACE INVESTIGATION

PROPOSED HANGAR NUMBER 3

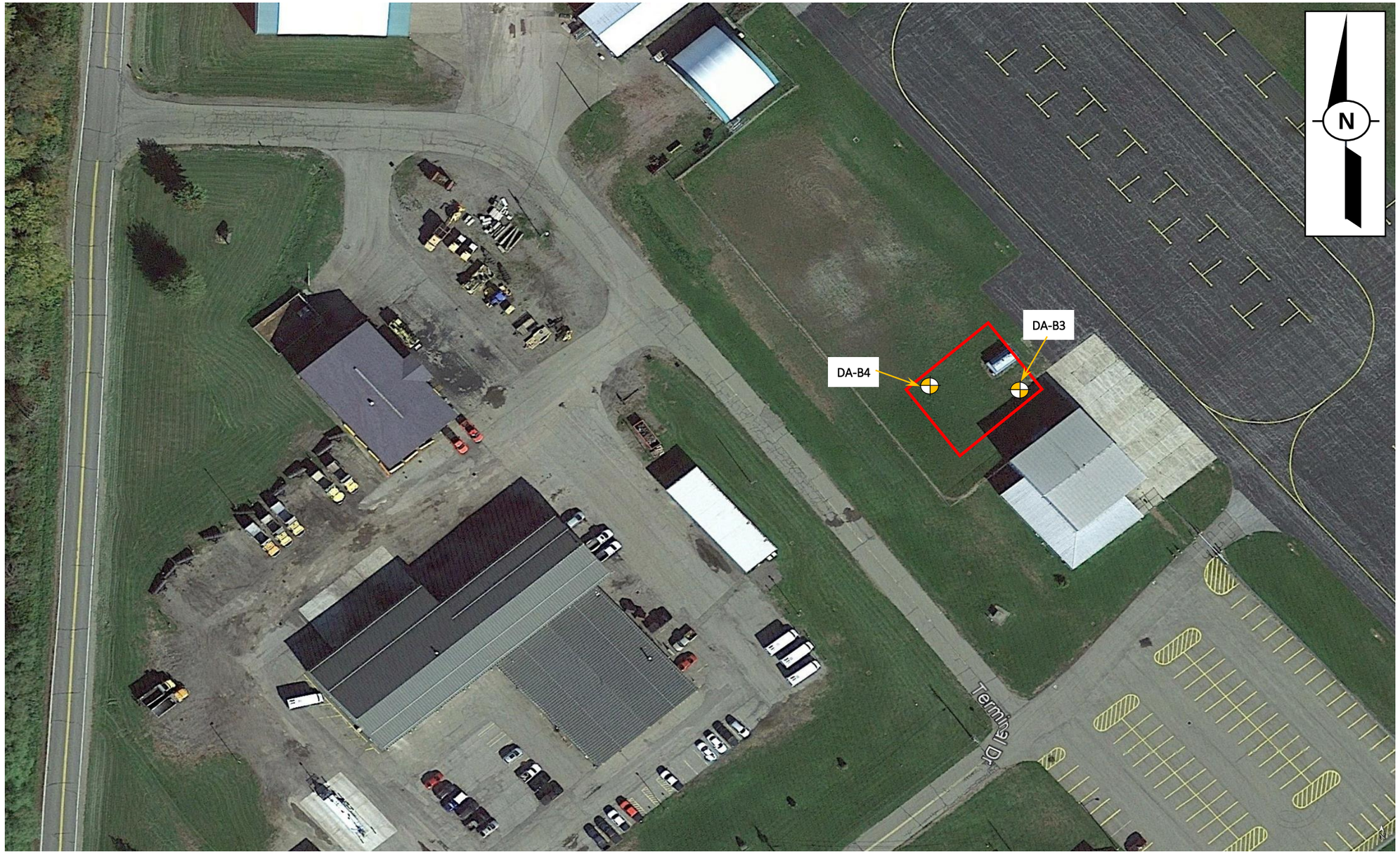
TOWN OF DUNKIRK CHAUTAUQUA COUNTY NEW YORK

PROJECT NO:	2191905-01
DATE:	SEP 2019
DRAWN BY:	CTB
CHECKED BY:	TJZ

SITE LOCATION SKETCH

FIGURE 1

C:\Users\CBruening\Desktop\Client Folders\AVANGRID\NYSEG\Avangrid - NYSEG Cadyville Dam\Fall Protection Report\[App A1-Cadyville Dam Figures.xls]Figure 4-Boring Location



GENERAL NOTES:

1. AERIAL PHOTOGRAPHY WAS OBTAINED FROM GOOGLE EARTH.
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5. LOCATIONS OF ALL FEATURES ARE APPROXIMATE.
6. FIGURE INTENDED TO BE PRINTED ON 11"X17".

LEGEND:

- BORING LOCATION & DESIGNATION
- PROPOSED HANGAR

EXPLORATION INFORMATION			
Location	**Northing**	**Easting**	**Elevation**
DA-B3	42° 29' 37.6"	-79° 16' 43.3"	±671'
DA-B4	42° 29' 37.6"	-79° 16' 43.9"	±671'

Northing, Easting & Elevation are approximate and obtained from Gogle Earth Digital Terrain Modeling Feature

Scale: 1" = 80'

80 0 80

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GEOTECHNICAL SUBSURFACE INVESTIGATION
PROPOSED HANGAR NUMBER 3
TOWN OF DUNKIRK CHAUTAUQUA COUNTY NEW YORK

PROJECT NO:	2191905-01
DATE:	MAY 2020
DRAWN BY:	CTB
CHECKED BY:	TJZ

BORING LOCATION SKETCH

FIGURE 2

C:\Users\CBruening\Desktop\Client Folders\AVANGRID\NYSEG Cadyville Dam\Fall Protection Report\[App A1-Cadyville Dam Figures.xls]Figure 4-Boring Location

APPENDIX B

BORING LOGS

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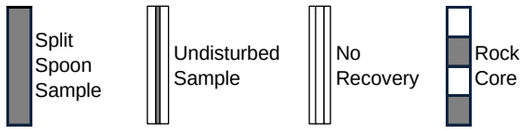
BORING LOG
GENERAL INFORMATION & KEY

Casing, Sampling and Other Equipment					Moisture Content	
H.S.A: Hollow Stem Auger (record I.D.)	Rock Core Sizes				M/C - moisture content	
S.S.A: Solid Stem Auger (record O.D.)	**Standard**	**I.D.**	**Wire Line**	**I.D.**	Dry	No moisture to touch
HW: Hollow Steel Flush Joint Casing (recorded I.D.)	EW / EX	1-13/32"	BQ	1-7/16"	Dry to Moist	Slight hand staining
Open: Open Hole / No Casing (record I.D.)	AW / AX	1-25/32"	NQ	1-7/8"	Moist	Stains hands easily
S.S.: Split Spoon (record I.D.)	BW / BX	2-7/32"	NQTK(NQ2)	2"	Moist to Wet	Stains hands, feels greasy
Hammer: Auto - Automatic, Man - Manual (rope & cat-head)	NW / NX	2-27/32"	NQ3	1-3/8"	Wet	Free water in sample
Undist: Tube - Shelby, Oste - Osteberg (record I.D. & length)	HW / HX	2-25/32"	HQ	2-1/2"	Saturated	Water flows from sample

Symbol Legend	Abbreviations	
	N - Standard Penetration Test N-value	TOR - Torvane
	REC - Recovery	% Rec - Percent Recovered
	WOH - Weight of Rods & Hammer	RQD - Rock Quality Designation
	WOR - Weight of Rods	
	NWE - No Water Encountered	
	PP - Pocket Penetrometer	

Modified Burmister Classification System (visual description of soil)	Percentage Ranges			
	Soil (3" minus)		Oversized (Cobbles & Boulders)	
This system divides the soil into three general categories of Gravel, Sand, Silt/Clay (fines). The predominant fraction is listed first and if it is more than 50% of the matrix the entire word will be capitalized otherwise the first letter of the fraction is capitalized. Quantifiers are used to give a sense of the percentage of the remaining fractions. LaBella has modified the classification system by NOT using "+" or "-" in the descriptions to further quantify the amount of each fraction.	**Quantifier**	**Percent**	**Quantifier**	**Percent**
	trace	1 - 10	very few	1 - 10
	little	11 - 20	few	11 - 25
	some	21 - 35	common	26 - 40
	and	36 - 50	numerous	41 - 50

Description of Soil Density

Soil consistency is determined while collecting soil samples using ASTM Method D-1586, *Standard Penetration Test N-Value* . The N-Value is calculated by adding the blow counts of the 2nd & 3rd sampling intervals together while driving a 2" O.D. sampler using a 140 lb. hammer falling 30" --OR-- by obtaining Pocket Penetrometer or Torvane Readings.

Coarse Grained Soils *Greater than half the material larger than No. 200 Sieve (sand and gravel)*		Fine Grained Soils [*Greater than half the material is smaller than No. 200 Sieve (silt and clay)]*					
		N-Value	Undrained Shear Strength				Soil Consistency
			psi	psf	tsf or kg/cm^2	kN/m^2	
N-Value	**Soil Consistency**	0 to 2	< 2.5	< 375	< 0.2	< 20	Very Soft
0 to 4	Very Loose	3 to 4	2.5 to 5	375 to 750	0.20 to 0.40	20 to 40	Soft
5 to 10	Loose	5 to 8	5 to 10	750 to 1,500	0.40 to 0.75	40 to 75	Firm -or- Medium Stiff
11 to 30	Medium Dense	9 to 15	10 to 20	1,500 to 3,000	0.75 to 1.5	75 to 150	Stiff
31 to 50	Dense	16 to 30	20 to 40	3,000 to 6,000	1.5 to 3.0	150 to 300	Very Stiff
> 50	Very Dense	> 30	> 40	> 6,000	> 3.0	> 3,000	Hard

Burmister Grain Size Distribution & Soil Type (sizes listed in inches or standard sieve tray size)

Boulder	Cobble	Gravel (passing 3", retained on #10)			Sand (passing #10, retained on #200)			Fines (passing #200)	
		Coarse	Medium	Fine	Coarse	Medium	Fine	Silt	Clay
>12"	12" - 3"	3" to 1"	1" to 3/8"	3/8" to #10	#10 to #30	#30 to #60	#60 to #200	#200 to 0.002 mm	<0.002 mm

Burmister Guide to Soil with Fines (Silt & Clay)

Designation	Dilatancy	Plasticity	Feel & Smear	Rolling Threads	Smallest Diameter of Thread
SILT	Slow to Rapid	Non-plastic	gritty / rough	No Thread can be rolled	Ball Cracks
clayey SILT	None to slow	Slightly plastic	rough to smooth	Difficult	1/4"
SILT & CLAY	None to slow	Low plasticity	rough to smooth	Less Difficult	1/8"
CLAY & SILT	None to very slow	Medium plasticity	smooth & dull	Readily	1/16"
silty CLAY	None to very slow	High plasticity	smooth & shiny	Very Readily	1/32"
CLAY	None	Very high plasticity	very shiny & waxy	Very Readily	1/64"

Field Guide for Describing Dilatancy & Toughness for Fine Soils (Silt & Clay)

Dilatancy

Term	Description
None	No Visible change to the specimen when shaking
Slow	Water appears slowly on the surfce of the specimen during shaking and does not disappear or disappears slowly when squeezed.
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing

Toughness

Term	Description
Low	Only slight pressure is required to roll a 1/8" thread near the plastic limit. Thread is weak and soft.
Medium	Medium pressure is required to roll a thread near the plastic limit. Thread and lump have medium stiffness.
High	Considerable pressure is required to roll the thread near its plastic limit. Thread and lump have a very high plasticity.

Bed Rock Classification Terms & Field Test / Field Observation - COLOR

Rock color is described in basic terms such as gray, black, green, white, and red. These term are often given modifiers such as light gray or dark gray.

Bed Rock Classification Terms & Field Test / Field Observation - LITHOLOGY

Geologic name/type of rock (e.g., Sandstone, Shale, Limestone, Granite, Gneiss, Schist)

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BORING LOG
GENERAL INFORMATION & KEY

Bed Rock Classification Terms & Field Test / Field Observation - FIELD HARDNESS

Term	*Description*
Very hard	Cannot be scratched by knife or sharp pick. Breaking hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched by knife or pick only with difficulty. Hard blow of hammer required to detach specimen.
Moderately hard	Can be scratched by knife or pick. Gouges or grooves to 1/4-inch deep can be excavated by hard blow of point of geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16-inch deep by firm pressure on knife or pick. Can be excavated in chips to pieces about 1-inch maximum size by hard blows of the point of a geologist's pick.
Soft	Can be grooved or gouged readily with knife or pick. Can be excavated in chips to pieces several inches in size by moderate blows a pick point. Small pieces can be broken by finger pressure.
Very Soft	Can be carved with knife or nail. Can be excavated with point of pick. Pieces 1-inch or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Bed Rock Classification Terms & Field Test / Field Observation - WEATHERING

Term	**Description**
Fresh	No visible signs of rock material weathering. Perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as a continuous framework or core stones.
Highly Weathered	More than half the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as a discontinuous framework or core stones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely in tact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

Bed Rock Classification Terms & Field Test / Field Observation - TEXTURE

Term	*Description*
Aphanitic	Grains not individually visible to the unaided eye.
Fine-grained	Grains barely visible to the unaided eye up to 1/16-inch in diameter.
Medium-grained	Grains between 1/16-inch and 3/16-inch in diameter.
Coarse-grained	Grains between 3/16-inch and 1/4-inch in diameter.
Very coarse-grained	Grains greater than 1/4-inch in diameter.

Bed Rock Classification Terms & Field Test / Field Observation - JOINTING

Types:

Term	*Description*
Joint	A break of geologic origin in the continuity of a body of rock along which there has been no visible displacement.
Shear	A discontinuity along which differential movement has taken place parallel to the discontinuity surface, sufficient to produce slickensides (i.e., striations and polishing).
Fault	Major discontinuity along which there has been appreciable displacment and accompanied by gouge and/or a severly fractured adjacent zone of rock.
Shear or Fault Zone	Band or zone of parallel, closely spaced discontinuities along which differential movement has occurred.

Orientation

Orientation of rock discontinuity relative to the horizontal, (strike and dip, or dip and dip direction in oriented cores), for regular coreing only the dip angle can be obtained.

Term	*Dip Angle (degrees)*
Horizontal	0 - 5
Low Angle	5 - 35
Moderately Dipping	35 - 55
High Angle	55 - 85
Vertical	85 - 90

Spacing

The perpendicular distance between discuntinuities normal to the plane of the fractures of a single sytem.

Term	*Thickness*	
Extremely Close	< 3/4-inch	< 20-mm
Very Close	3/4-inch to 2-1/2-inch	20-mm to 60-mm
Close	2-1/2-inch to 8-inch	60-mm to 200-mm
Moderate	8-inch to 24-inch	200-mm to 600-mm
Wide	24-inch to 80-inch	600-mm to 2000-mm
Very Wide	80-inch to 240-inch	2000-mm to 6000-mm
Extremely Wide	> 240-inch (20 ft)	> 6000-mm

BEDDING, ROCK QUALITY DESIGNATION & ROCK MASS CLASSIFICATION

Bedding is the arrangement of a sedimentary rock in beds or layers. The bedding surface may also be applied to the layered arrangement of tabular masses of igneous rock. The terminology to the right is used to describe the thickness of bedding as measured between bedding surfaces:

Term	*Thickness*	
	mm	*in. (round)*
Very Thin Laminae	< 1	< 0.04
Thin Laminae	1 - 3	0.04 - 0.12
Medium Laminae	3 - 6	0.12 - 0.25
Thick Laminae	6 - 10	0.25 - 0.40
Very Thin Bed	10 - 30	0.40 - 1.2
Thin Bed	30 - 100	1.2 - 4.0
Medium Bed	100 - 300	4.0 - 12
Thick Bed	300 - 1,000	12 - 40
Very Thick Bed	> 1,000	> 40

Rock Quality Designation (RQD) & Rock Mass Classification based on RQD

RQD	*Rock Mass Class*
< 25%	very poor
25% to 50%	poor
50% to 75%	fair
75% to 90%	good
90% to 100%	excellent

$$RQD = \frac{\Sigma \text{ of pieces} \geq 4"}{\text{total length of run}}$$

ASTM Method D-6032, *Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Cores*

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TEST BORING LOG

Boring No.	**DA-B3**
Project No.:	2191905.04
Start Date:	05/19/21
Finish Date:	05/19/21
Classification By:	D. Keller
Surface Elev.:	+/-665

Project Name:	Dunkirk Airport Hangar #3 Eastern Location
Location:	Town of Dunkirk, Chautauqua County, New York
Client:	Chautauqua County
Drilling Firm:	LaBella Environmental, LLC
Driller:	M. Pepe

Key:
Geologic Strata Change
Gradation Change Within Strata

Drill Rig:	Geoprobe 6620 DT
Casing:	2-1/4" HSA
Sampler:	1-3/8" ID S.S.
Undisturbed:	None
Hammer:	140# Automatic, 30" drop
Other:	
Rock Core:	None

Coordinates: **N:** 42.49370 **E:** -79.27860

Depth (ft.)	Sample Number	Symbol	Blows on Sampler per 6"	VISUAL-MANUAL MATERIAL DESCRIPTION (trace (1 - 10%), little (11 - 20%), some (21 - 35%), and (36-50%);	Depth of Change	COMMENTS (e.g., N-value, recovery, moisture, core run, % recovered, RQD)
1	S-1		4	Brown, coarse to fine SAND, little medium to fine Gravel, some Silt.		**S-1** 0.0' - 2.0' **N=19**
			12			REC = 16" M/C: Dry to Moist
			7			Consistency: Medium Dense
2			4	**-FILL-**		
3	S-2		3	Sample S-2 similar to Sample S-1, trace organics.		**S-2** 2.0' - 4.0' **N=19**
			9			REC = 6" M/C: Dry to Moist
			10			Consistency: Medium Dense
4			5		4.0'	
5	S-3		WOH	Mottled gray and light brown, silty CLAY, trace fine Sand.		**S-3** 4.0' - 6.0' **N=3**
			1			REC = 4" M/C: Moist
			2			Consistency: Soft
6			3	**-ALLUVIAL DEPOSITS-**		
7	S-4		8	Mottled gray and light brown and dark brown, silty CLAY,		**S-4** 6.0' - 8.0' **N=32**
			17	trace coarse to fine Sand, trace fine Gravel.		REC = 19" M/C: Moist
			15			Consistency: Hard
8			14		8.0'	
9	S-5		7	Mottled light brown and yellow-brown, silty CLAY, trace coarse to fine Sand,		**S-5** 8.0' - 9.8' **N=30**
			8	trace fine Gravel **-ALLUVIAL DEPOSITS-**	9.0'	REC = 23" M/C: Dry to Moist
			22	Very soft, highly weathered, dark gray, aphanitic, SHALE.		Consistency: Very Stiff
10			50/4"	**-WEATHERED BEDROCK-**		Sampler refusal @ 9.8'
						Auger Refusal @ 10.0'
11				**Bottom Of Exploration 10.0 feet**		
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						

Groundwater/Caving	Date (mm/dd/yy)	Time (24 hr clock)	Depth in feet to: Bot of Casing	Bot of Hole	Water
While Drilling:	05/19/21	NR	4.0	6.0	N.W.E.
While Drilling or Before Rock Coring:	NR	NR	NR	NR	NR
Before Casing Removed:	05/19/21	NR	8.0	9.8	N.W.E.
After Casing Removed:	05/19/21	NR	Removed	2.5	N.W.E.

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TEST BORING LOG

Boring No.	**DA-B4**
Project No.:	2191905.04
Start Date:	05/19/21
Finish Date:	05/19/21
Classification By:	D. Keller
Surface Elev.:	+/-664

Project Name:	Dunkirk Airport Hangar #3 Eastern Location
Location:	Town of Dunkirk, Chautauqua County, New York
Client:	Chautauqua County
Drilling Firm:	LaBella Environmental, LLC
Driller:	M. Pepe

Key:
Geologic Strata Change
Gradation Change Within Strata

Drill Rig:	Geoprobe 6620 DT		**Rock Core:** None
Casing:	2-1/4" HSA	**Other:**	
Sampler:	1-3/8" ID S.S.		
Undisturbed:	None		
Hammer:	140# Automatic, 30" drop		

Coordinates: **N:** 42.49370 **E:** -79.27890

Depth (ft.)	Sample Number	Symbol	Blows on Sampler per 6"	VISUAL-MANUAL MATERIAL DESCRIPTION trace (1 - 10%), little (11 - 20%), some (21 - 35%), and (36-50%);	Depth of Change	COMMENTS (e.g., N-value, recovery, moisture, core run, % recovered, RQD)
1	S-1		3 8 5	Dark brown, coarse to fine SAND, some Silt, little medium to fine Gravel **-FILL-**	1.5'	**S-1** 0.0' - 2.0' **N=13** REC = 19" M/C: Dry to Moist Consistency: Medium Dense
2			6			
3	S-2		4 9 6	Mottled dark gray and dark brown, silty CLAY, trace fine Sand. **-ALLUVIAL DEPOSITS-**		**S-2** 2.0' - 4.0' **N=15** REC = 18" M/C: Dry to Moist Consistency: Stiff
4			5		4.0'	
5	S-3		2 3	Mottled gray and light brown, silty CLAY, trace organic fibers		**S-3** 4.0' - 6.0' **N=7** REC = 22" M/C: Dry to Moist
6			4 8	**-ALLUVIAL DEPOSITS-**		Consistency: Medium Stiff
7	S-4		12 13	Mottled gray and light brown, silty CLAY, trace coarse to fine Sand, trace fine Gravel.		**S-4** 6.0' - 8.0' **N=26** REC = 24" M/C: Dry to Moist
8			13 20			Consistency: Very Stiff
9	S-5		8 9	Sample S-5 similar to Sample S-4.		**S-5** 8.0' - 10.0' **N=20** REC = 20" M/C: Dry to Moist
10			11 12		10.0'	Consistency: Very Stiff
11	S-6		9 10	Very soft, highly weathered, dark gray, aphanitic, SHALE.		**S-6** 10.0' - 12.0' **N=27** REC = 17" M/C: Dry to Moist
12			17 21	**-WEATHERED BEDROCK-**		Consistency: Medium Dense
13	S-7		12 43	Sample S-7 similar to Sample S-6.		**S-7** 12.0' - 13.2' **N>50** REC = 11" M/C: Dry to Moist
14			50/2"			Consistency: Very Dense sampler refusal @ 13.2' Auger refusal @ 14.3'
15				**Bottom Of Exploration 14.3 feet**		
16						
17						
18						
19						
20						
21						
22						
23						

Groundwater/Caving	Date (mm/dd/yy)	Time (24 hr clock)	Depth in feet to: Bot of Casing	Bot of Hole	Water
While Drilling:	05/19/21	NR	10.0	10.0	N.W.E.
While Drilling or Before Rock Coring:	NR	NR	NR	NR	NR
Before Casing Removed:	05/19/21	NR	14.3	14.3	N.W.E.
After Casing Removed:	05/19/21	NR	Removed	2.7	N.W.E.

APPENDIX C

SEISMIC ANALYSIS

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LaBella Associates, D.P.C.
300 Pearl Street, Suite 130
Buffalo, New York 14202
p: 716-551-6281

Project: Dunkirk Airport Hangar Second Option
Location: Dunkirk, Chautauqua County, New York. File: 2191905.03
Client: Chautauqua County
Prepared by AJH Date: 5/24/21 Checked by CTB Date: 6/17/20

SEISMIC SITE CLASSIFICATION WORK SHEET

BUILDING CODE: INTERNATIONAL BUILDING CODE - SECTION 1616 BORING: See Below

Class F Questions:

1 Are soils vulnerable to potential failure or collapse under seismic loading present (i.e., liquefiable, quick/highly sensitive clay, collapsible weakly cemented)?	NO
2 Is there a layer of Peat or Highly Organic Clay greater than 10 feet in thickness?	NO
3 Is there a layer of High Plasticity Clay (PI > 75) greater than 25 feet in thickness?	NO
4 Is there a layer of soft to medium stiff Clay greater than 120 feet in thickness?	NO

Class E Questions:

More than 10 feet of soil having ALL the following:	
1 Plasticity Index (PI) > 20?	No
2 Moisture Content (w) >= 40%?	No
3 Undrained shear strength (su) < 500 psf?	No

CLASS E & F CHECKS
CONTINUE WITH SHEET BELOW

Site Classification Determination using SPT Results

LAYER INTERVAL			Thick	N-VALUES (STANDARD PENETRATION TEST RESULTS) FOR EACH SAMPLE RETRIEVED WITHIN LAYER																		AVG N VALUE	d_i / N_i
NO.	BEG	END	d_i	B3	B4																		N_i	
1	0	2	2	19	13																		16.0	0.13
2	2	4	2	19	15																		17.0	0.12
3	4	6	2	3	7																		5.0	0.40
4	6	8	2	32	26																		29.0	0.07
5	8	10	2	30	20																		25.0	0.08
6	10	12	2	70	27																		48.5	0.04
7	12	13	1	100	93																		96.5	0.01
8	13	15	2	100	70																		85.0	0.02
9	15	18	3	100	100																		100.0	0.03
10	18	20	2	100	100																		100.0	0.02
11	20	30	10	100	100																		100.0	0.10
12	30	40	10	100	100																		100.0	0.10
13	40	50	10	100	100																		100.0	0.10
14	50	60	10	100	100																		100.0	0.10
15	60	70	10	100	100																		100.0	0.10
16	70	80	10	100	100																		100.0	0.10
17	80	90	10	100	100																		100.0	0.10
18	90	100	10	100	100																		100.0	0.10
19	-	-	-																					
20	-	-	-																					
21	-	-	-																					
22	-	-	-																					
23	-	-	-																					
24	-	-	-																					
25	-	-	-																					
		Σd_i:	100																				$\Sigma d_i/N_i$:	1.72

$$N = \frac{\Sigma d_i}{\Sigma d_i/N_i} = \frac{100.0}{1.72} = 58.2$$

CLASS C	N > 50
CLASS D	15 ≤ N ≤ 50
CLASS E	N < 15

SITE CLASSIFICATION: Class C

Very Dense Soil, Soft Rock

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Project: **Dunkirk Airport Hangar Second Option**
Location: **Dunkirk, Chautauqua County, New York.** File: 2191905.03
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SEISMIC SITE CLASSIFICATION WORK SHEET

The following methodology was use for establishing an N-value whent the split barrel sampler encountered refusal:
70 when refusal occurred within the 1st 6-inch sample interval; 60 when refusal occurred within the 2nd 6-inch sample interval; adding the 2nd and 3rd blow counts and rounding up to the next 5 or 10 when refusal occurred within the 3rd 6-inch sample interval and 100 for competent rock.

SITE CLASSIFICATION: Class C Very Dense Soil, Soft Rock

Risk Category	Nature of occupancy
I	Buildings and other structures that represent low risk to human life in the event of failure, including but not limited to:
	Agricltural Facilities
	Certain Temporary Facilities
	Minor Storage Facilities
II	All buildings and other structures excepth those listed in Risk Category I, III, and IV
III	Buildings and other structures, the failure of which could pose a substantial risk to human life, including but not limited to:
	Primary occupancy is public assembly of greater than 300 people.
	Group E Occupancies greater than 250 people.
	Educational Occupancies for students above 12th grade greater than 500 people.
	Group I-2 Occupancies greater then 50 resident care recipients but NOT having surgery or emergency treatment facilities.
	Group I-3 Occupancies.
	Any other Occupancies of 5,000 people or greater.
	Power Generating Stations
	Potable Water Treatment Facilities.
	Waste Water Treatment Facilities.
	Other Public Utility Facilities not listed in Risk Category IV.
	Buildings and other structures, not included in Risk Category IV, with potential to cause a substantial economic impact and/or mass disruption to day-to-day civilian life in the event of failure.
	Buildings and other structures, not included in Risk Category IV, (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, hazardous waste or explosives) containing toxic or explosive substances where the quantity of the material exceeds the threshold quantity established by the authority having jurisdiction and is suffficient to pose a threat to the public if released.
IV	Buildings and other structures designated as essential facilities, including but not limited to:
	Group I-2 Occupancies having surgery or emergency treatment facilities
	Fire, Rescue, Ambulance and Police Stations and Emergency vehicle garages
	Designated Earthquake, Hurricane or other emergency shelters
	Designated Emergency Preparedness, communications & operations centers for emergency response.
	Power-generating stations and other public utility facilities requred as emergency back up facilities for Risk Category IV Structures.
	Buildings and other structures, the failure of which could pose a substantial hazard to the community.
	Buildings and other structures, (including, but not limited to, facilities that manufacture, process, handle, store, use, or dispose of such substances as hazardous fuels, hazardous chemicals, hazardous waste) containing sufficient quantities of highly toxic substances where the quantity of the material exceeds the threshold quantity established by the authority having jurisdiction and is suffficient to pose a threat to the public if released.

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SEISMIC SITE PARAMETERS

Latitude
N: 42.4938°
Longitude
E: -79.2787°

Risk Category: II

Seismic Site Class: C

Reference: ASCE 7-16

BASIC PARAMETERS

Parameter	Value	Description
S_S	0.119	MCE_R ground motion (period = 0.2 sec)
S_1	0.039	MCE_R ground motion (period = 1.0 sec)
S_{MS}	0.155	Site-modified spectral acceleration value
S_{M1}	0.059	Site-modified spectral acceleration value
S_{DS}	0.103	Numeric seismic design value at 0.2 sec SA
S_{D1}	0.039	Numeric seismic design value at 1.0 sec SA

ADDITIONAL INFORMATION

Parameter	Value	Description
SDC	A	Seismic Design Category
F_A	1.30	Site amplification factor at 0.2 sec
F_V	1.50	Site amplification factor at 1.0 sec
CR_S	0.939	Coefficient of risk at 0.2 sec
CR_1	0.926	Coefficient of risk at 1.0 sec
PGA	0.062	MCE_G peak ground acceleration
F_{PGA}	1.30	Site amplification factor at PGA
PGA_M	0.080	Site modified peak ground acceleration
T_L	6.0	Long-period transition period (sec)
S_SRT	0.119	Probabilistic risk -targeted ground motion at 0.2 sec
S_SUH	0.127	Factored uniform-hazard spectral acceleration at 0.2 sec (2% probability of exceedance in 50 years)
S_SD	1.50	Factored deterministic acceleratoin value at 0.2 sec
S_1RT	0.039	Probabilistic risk -targeted ground motion at 1.0 sec
S_1UH	0.043	Factored uniform-hazard spectral acceleration at 1.0 sec (2% probability of exceedance in 50 years)
S_1D	0.60	Factored deterministic acceleratoin value at 1.0 sec
PGAd	0.50	Factored deterministic acceleratoin value at PGA
k_h	0.04030	Calculated Horizontal Seismic Loading (k_h = 0.5 x F_{PGA} x PGA)
k_v	0.01346	Calculated Vertical Seismic Loading (k_V = 0.167 x F_{PGA} x PGA)

The horizontal and vertical Swismic Loading coefficents provided above are used for slope stability seismic evaluation

The information provide on these two pages was copied from the Applied Technology Council (ATC) Hazard by Location Website for the location listed.

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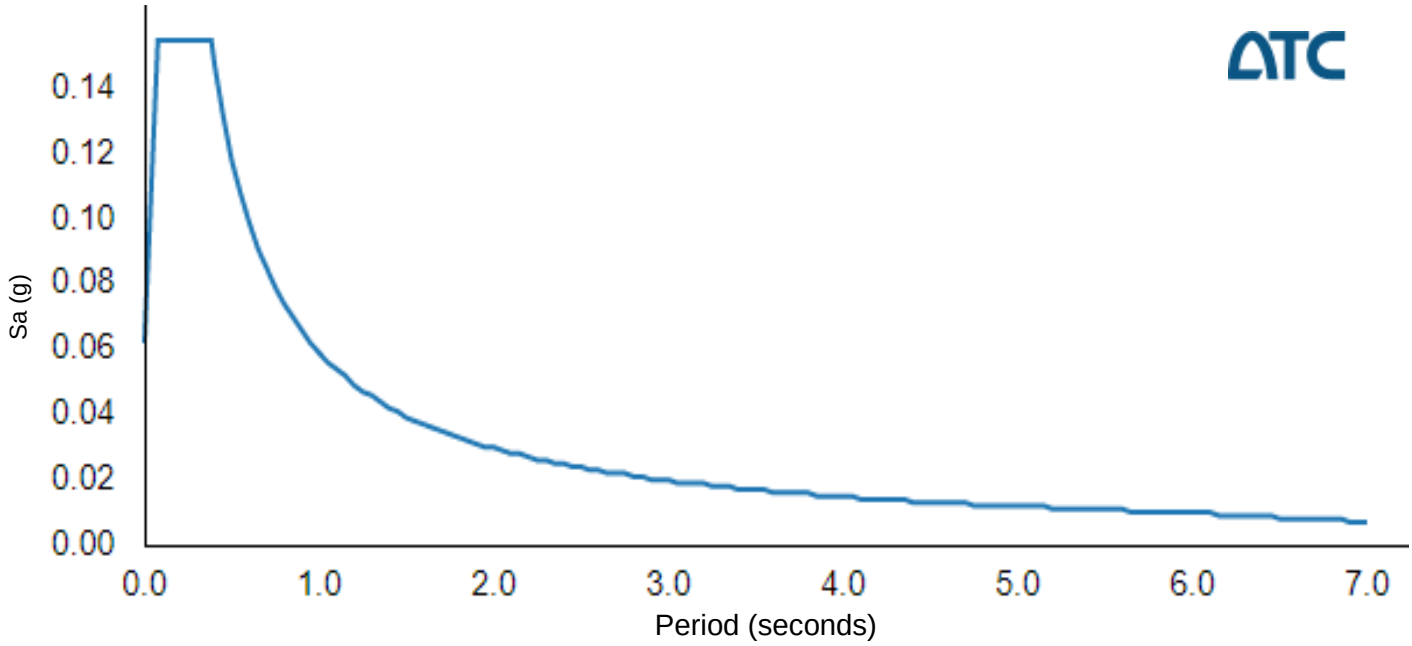
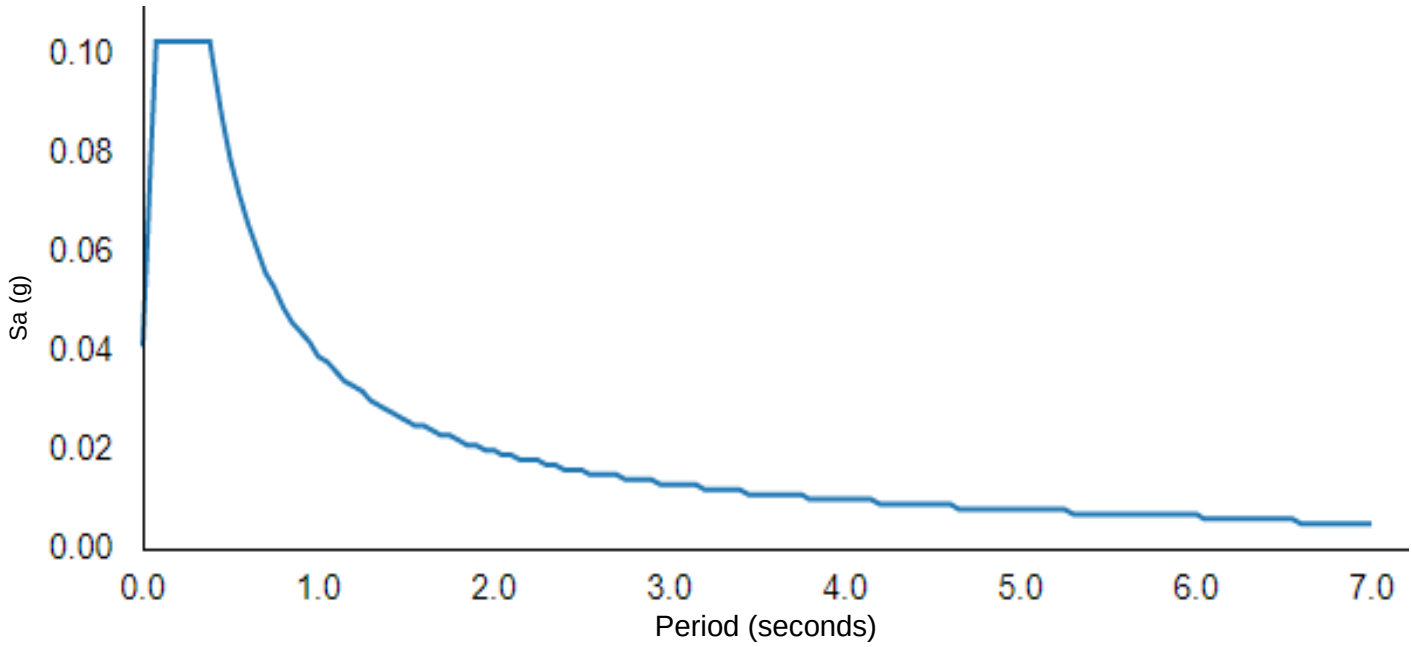
MCRE Horizontal Response Spectrum



Design Horizontal Response Spectrum



The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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SECTION 011200 - MULTIPLE CONTRACT SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes

1. Project information.
2. Project Coordinator responsibilities.
3. Multiple Prime Contract Responsibilities
4. Access to the Site
5. Coordination with occupants.
6. Coordination with other contractors, Utilities and Owner Workforce
7. Temporary Services
8. Temporary Suspension of Work
9. Work restrictions.
10. Project completion.
11. Differing Site Conditions
12. Safety
13. Specification and Drawing conventions.
14. Record Drawings

B. Description of work;
1. Work includes the construction of a new 5,000 square foot aircraft hangar at the Dunkirk Airport in the Town of Sheridan, NY.

C. Work by others;
1. The County will be responsible for asphalt work, seeding/topsoil and final grading.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, the condition at which roofing is insulated and weathertight; exterior walls are insulated and weathertight; and openings are closed with permanent construction or substantial temporary closures equivalent in weather protection to permanent construction.

1.4 PROJECT COORDINATOR

A. Project coordinator shall be responsible for coordination between the [**General Construction Contract, Mechanical Contract, Plumbing Contract**] and [**Electrical Contract**]

B. The Owner's representative shall act as the Project Coordinator.

1.5 PROJECT COORDINATOR RESPONSIBILITIES

A. Project coordinator shall perform Project coordination activities for the multiple contracts, including, but not limited to, the following:

1. Provide typical overall coordination of the Work.
2. Coordinate shared access to workspaces.
3. Coordinate product selections for compatibility.
4. Provide overall coordination of temporary facilities and controls.
5. Provide coordination of access to the construction site and lay-down areas.
6. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
7. Coordinate construction and operations of the Work with work performed by each Contract [**and Owner's construction forces**].
8. Approve coordination drawings in collaboration with each contractor to coordinate work by more than one contract.
9. Coordinate sequencing and scheduling of the Work. Include the following:

    a. Initial Coordination Meeting: At earliest possible date, arrange and conduct a meeting with contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.
    b. Prepare combined Contractors' Construction Schedule for entire Project. Base schedule on preliminary construction schedule. Secure time commitments for performing critical construction activities from contractors. Show activities of each contract on a separate sheet. Prepare a simplified summary sheet indicating combined construction activities of contracts.

        1) Submit schedules for approval.
        2) Distribute copies of approved schedules to contractors.

10. Provide photographic documentation.
11. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
12. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
13. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.
14. Coordinate protection of the Work.
15. Coordinate completion of interrelated punch list items.
16. Coordinate preparation of Project Record Documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.

1.6 GENERAL REQUIREMENTS OF CONTRACTS

A. Extent of Contract: Unless the Agreement contains a more specific description of the Work of each Contract, requirements indicated on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
2. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be the work of [**each contract for its own work**].
3. Painting for the work of each contract shall be the work of [**each contract for its own work**].
4. Cutting and Patching: [**Each contract shall perform its own cutting and patching work**].

B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the work.

C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section, **each** contract is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.
2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
3. Its own field office, complete with necessary furniture, utilities, and telephone service.
4. Its own storage and fabrication sheds.
5. Temporary enclosures for its own construction activities.
6. Staging, scaffolding and/or lifts for its own construction activities.
7. General hoisting facilities for its own construction activities, up to 2 tons (2000 kg).
8. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
9. Progress cleaning of work areas affected by its operations on a daily basis.
10. Secure lockup of its own tools, materials, and equipment.
11. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
12. Requirements of the Construction Safety and Phasing Plan – Section 01 12 01

D. Use Charges: Comply with the following:
1. Water Service: Provided by Owner without metering
2. Electric Power Service: Provided by Owner without metering

1.7 GENERAL CONSTRUCTION CONTRACT

A. Work of the General Construction Contract includes, but is not limited to, the following:

1. Remaining work not identified as work under other contracts.

2. General Site work and staging

3. Concrete foundations

4. Pre-engineered Metal Building System
5. Doors, and hardware
6. Vertical bi-fold hangar door and controls
7. All finishes

B. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:

1. Temporary facilities and controls that are not otherwise specifically assigned to the [**Mechanical, Plumbing and Electrical Contracts**]

2. Toilet Facilities provide and maintain one (1) temporary facility on site for use by all Contractors. Remove upon completion.
3. Temporary enclosure for building exterior, except as indicated.
4. Temporary access roads for their own work
5. General waste disposal facilities.
6. Pest control.
7. Snow removal at work and temp staging areas as required
8. Barricades, warning signs, and lights.
9. Site enclosure fence.

1.8 MECHANICAL CONTRACT

A. Work of the Mechanical Construction Contract includes, but is not limited to, the following:
1. Gas fired unit heaters
2. Packaged Terminal Air Conditioning Units
3. Ductwork and accessories
4. Building controls

B. Temporary facilities and controls in the Mechanical Construction Contract include, but are not limited to, the following:
1. Temporary access roads for their own work
2. General waste disposal facilities.
3. Temporary heat during construction until building enclosure.

1.9 PLUMBING CONTRACT

A. Work of the Plumbing Construction Contract includes, but is not limited to, the following:
1. Site Utilities including Water, Sanitary and Gas
2. Valves
3. Plumbing Fixtures
4. Domestic water, waste and vent piping
5. Pneumatic piping and devices

B. Temporary facilities and controls in the Mechanical Construction Contract include, but are not limited to, the following:
   1. Temporary access roads for their own work
   2. General waste disposal facilities.

1.10 ELECTRICAL CONTRACT

A. Work of the Electrical Construction Contract includes, but is not limited to, the following:
   1. Electrical Service
   2. Connections to equipment provided by other trades
   3. Low voltage power conductors and cables
   4. Panel boards
   5. Wiring devices
   6. Main service disconnect
   7. Manual Transfer switch
   8. Interior and Exterior lighting

B. Temporary facilities and controls in the Mechanical Construction Contract include, but are not limited to, the following:
   1. Temporary access roads for their own work
   2. Temporary lighting during construction.
   3. General waste disposal facilities.

1.11 ACCESS TO THE SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Construction Safety and Phasing Plan" AC 150/5370-2G; Contractor shall adhere to all requirements outlined in the CSPP. (See Section 01 12 01)

C. Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

   1. Limits: Confine construction operations to rooms where work is called for.
   2. Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

      a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
      b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

E. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

F. The Contractor shall designate a safe parking area(s) for workers to park private vehicles near the project site acceptable to the Project Coordinator. Contractor personnel shall park in non-designated parking areas within the right of way only with the prior approval of the Project Coordinator.

1.12 COORDINATION WITH OCCUPANTS

A. Owner Occupancy: Owner will not occupy the Hangar during the entire construction period.. Cooperate with Owner during construction operations to minimize conflicts and facilitate concurrent work by other contractors. Perform the Work so as not to interfere with airport operations in adjacent buildings and aircraft movement surfaces.. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.13 COORDINATION WITH CONTRACTORS, UTILITIES AND OWNER FORCES

A. Owner reserves the right to let other contracts in connection with this Project, even of like character to Contractor’s Work. Owner also reserves the right to perform additional Project work using its own forces, or to have additional work performed by utilities. Contractor shall fully cooperate with others performing Project work, to prevent delays and increased Project costs and expenses. Contractor shall familiarize itself with the work of others whose work affects or ties in with its own, and shall be fully responsible for the finished result of its own Work. Contractor shall afford other Project workers adequate opportunity for the introduction and storage of their materials, and the execution of their work, and shall promptly connect and coordinate its work with theirs.

B. If any part of Contractor’s Work depends upon the work of any other Project worker for proper execution or results, Contractor shall inspect and promptly report to Owner any defect in such work that renders such work unsuitable for such proper execution and results. Contactor’s failure to inspect and report shall constitute an acceptance of the other Project worker’s work as fit and proper for the receipt of its Work, except as to defects which may develop in the other Project worker’s work after Contractor’s execution of subsequent work.

C. To ensure the proper execution of Contractor’s subsequent work, Contractor shall measure work already in place, and shall at once report to Owner any measurement discrepancy between the executed work and Contract Documents.

D. Extra costs and expenses, including without limitation additional testing and inspection, and additional Owner, Consultant and other contractor services, which are caused defective or ill-timed work, by the neglect or refusal of the contractor to provide or complete any portion of its

work at the proper time and in the proper manner, shall be fully borne by the contractor at no additional cost to the Owner.

1.14 TEMPORARY SERVICES

A. Contractor shall provide, maintain, and pay for all necessary temporary services such as sanitary facilities, water, heat, light, power, telephone, etc., which are required for the proper prosecution of the Work.

B. Contractor shall make all necessary arrangements with local authorities and utility companies having jurisdiction over these services. All work in connection with such temporary services shall be in accordance with the requirements of such local authorities and utility companies, and with applicable codes and regulations.

C. Upon completion of Work or when the temporary services are no longer required, temporary work shall be removed and the facilities satisfactorily restored to their original condition.

1.15 TEMPORARY SUSPENSION OF THE WORK

A. If the performance of all or any portion of the work is suspended or delayed by the Architect or Owner in writing for an unreasonable period of time (not originally anticipated, not customary, or not inherent to the construction industry) and the Contractor believes that it is due additional compensation and/or contract time is due as a result of such suspension or delay, the Contractor shall submit to the Owner in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

B. Upon receipt, the Owner will evaluate the Contractor's request. If the Owner agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by circumstances beyond the control of and not the fault of the Contractor, its Suppliers or subcontractors at any approved tier, and not caused by weather, the Engineer will make an adjustment (excluding profit) and modify the contract in writing accordingly. The Contractor will be notified of the Owner’s determination whether or not an adjustment to the contract is warranted. No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract. No contract adjustment will be allowed unless the Contractor has provided the required written request for adjustment within the time prescribed.

C. During the progress of the work, the Owner may direct the Contractor in writing to suspend work due to circumstances beyond the Contractor's control. If the performance of all or any portion of the work is suspended or delayed by the Owner for an unreasonable period of time (not originally anticipated, not customary, or not inherent to the construction industry) and the Contractor believes that it is due additional compensation and/or additional time to perform the work as a result of such suspension or delay, the Contractor shall keep daily records of all labor, material and equipment idled or used in connection with such work and the cost thereof in accordance with the recordkeeping provisions of *Notice and Recordkeeping*.

D. The Contractor shall submit a request for contract adjustment within seven (7) calendar days of receipt of the notice from the Owner to resume work. This request shall set forth the reasons and support for such adjustment. Upon receipt, the Owner will evaluate the Contractor's request for contract adjustment, and if it is determined that the cost and/or time required for the performance of the contract has increased as a result of a suspension of work directed by the Owner and the suspension was caused by circumstances beyond the control of and not the fault of the Contractor, its Subcontractors, Manufacturers, Fabricators or Material Suppliers and not caused by weather, an adjustment, excluding profits, will be made to the contract. The Owner will notify the Contractor of the determination whether or not an adjustment to the contract is warranted. No contract adjustment will be made to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided for or excluded under any other term or condition of this contract. No contract adjustment will be allowed unless the Contractor has provided the required written notice, or written notice was provided to the Contractor by the State.

E. Compensation for increased costs of the work resulting from a Suspension of Work Directed by the Owner will be made in accordance with §109-05 *Extra Work and Time Related Compensation*.

F. Compensation for time related costs, if any, will be made in accordance with §109-05D. *Time Related Dispute Compensation*.

1.16 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

2. Emergency Building Exits during Construction: Keep all exists required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.

3. Do not obstruct roadways, sidewalks or other public ways without permit.

4. Contractor signage: Not allowed on site.

B. On-Site Work Hours: Limit work to normal business working hours of 6:00 a.m. to 4:30 p.m., Monday through Friday.

1. Weekend Hours: Coordinate with Owner. Notify Owner point of contact no less than 7 days for weekend hours.
2. Early/Late Hours outside of On-site Work Hours: Coordinate with Owner. Notify Owner Project Coordinator no less than 7 days for weekend hours.
3. Coordinate construction schedule and operations with Owner. Access to the work site is authorized only during On-Site Work Hours. Any exceptions, including holidays, weekends or early/late hours may be approved on an exception basis at the sole discretion of the Owner’s Project Coordinator.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than seven days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than seven days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.
3. Refer to Section 017100 for requirements during noise and odor producing activities.

E. Restricted Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

F. Employee Identification: Provide photo identification tags for Contractor personnel working on Project site. Require personnel to use photo identification tags at all times.

G. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.17 PROJECT COMPLETION

A. The work shall be substantially complete on or before May 31, 2022.

B. The Contractor shall employ and supply a sufficient force of workers, materials and equipment and shall progress the work with such diligence so as to ensure completion of the work prior to the contract completion date.

C. In accordance with the contract agreement, the Contractor shall complete all work to be performed under the contract within the time stated in the contract agreement or within such extended time for completion as may be granted by the Commissioner. If the Contractor desires an extension of time, an *Application for Extension of Completion Date* shall be submitted to the Owner sufficiently early for the Owner to make a recommendation and forward the application so that it may be filed with the NYS DOT Aviation Bureau at least 15 days prior to the contract completion date.

D. The Contractor may propose a projected early completion date on any progress schedule submission.

1.18 DIFFERING SITE CONDITIONS

A. Contactor shall within twenty-four (24) hours of discovery, and before such conditions are disturbed, notify Owner in writing in accordance with 23 CRF 635.109 (a) (1):

B. During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party of the specific differing site conditions before the site is further disturbed and before the affected work is performed.

C. Upon written notification, the Engineer will investigate the site conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the contract modified in writing accordingly. The Engineer will notify the Contractor, of the determination whether or not an adjustment to the contract is warranted.

D. No contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice.

E. The Department will administer the above Federal regulations as follows:
   1. During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, the party discovering such conditions shall promptly notify the other party of the specific differing site conditions before the site is further disturbed and before the affected work is performed, with subsequent written notice to be provided later. The Contractor shall comply with the notice and recordkeeping provisions.
   2. The Contractor or the Owner, as the case may be, must make written notice to the other party of the existence of apparent subsurface or latent physical conditions if that party wishes to adjust the contract price or time of performance, including direct costs and/or time related compensation, if applicable. Such notice shall be given within 15 calendar days of the time at which the party had knowledge, or should have had knowledge of the differing site condition. The Department will have no liability and no adjustment will be made for any damages which accrued more than 15 calendar days prior to the filing of such a notice with the Engineer.
   3. Upon written notice, the Engineer will investigate the site conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of the work, an adjustment, excluding anticipated profits, will be made to the contract. The Engineer will make an initial response in writing to the Contractor, within 21 calendar days, with a determination whether or not an adjustment to the contract is warranted. Situations requiring examination of the site or input from other Department personnel may require additional time to resolve. No contract adjustment will be allowed unless the Contractor has provided the required written notice, or written notice was provided to the Contractor by the State.
   4. If an agreement on an adjusted price has not been reached before the work begins, the Contractor shall keep daily records and make reports of all labor, material and equipment used in connection with such work and the cost thereof as specified in §109-05C. *Force Account Reports*. Compensation for increased costs of the work resulting from the differing site conditions will be made in accordance with §109-05 *Extra Work*

and Time Related Compensation. Compensation for time related costs, if any, will be made in accordance with §109-05D. *Time Related Dispute Compensation*.

1.19 SAFETY

A. The Contractor shall provide fall protection for all workers in compliance with 29 CFR 1926 and NYS Labor Law. The Contractor shall include procedures to provide fall protection in the Project Safety and Health Plan. The minimum fall protection requirements include the following:
   1. Fall protection shall be provided for all workers at or above 6 feet or the height thresholds listed in 29 CFR 1926, Subpart L Scaffolds, Subpart M Fall Protection and Subpart R Steel Erection, whichever is lower, and for all locations where there is a risk of a fall onto dangerous equipment or an impalement hazard, regardless of height. All fall protection systems shall meet the requirements of 29 CFR 1926, Subpart M. For situations where lifelines are interrupted, double lanyards shall be utilized to ensure that workers are continuously protected. One lanyard shall remain connected at all times.
   2. Attachments or other temporary appurtenances on all beams and other structural elements shall be in place prior to erection or removal to provide fall protection until other means of protection such as deck forms are in place. Fall protection shall consist of personal fall arrest systems, safety nets or other means. During placement or removal of structural members when the member is supported by a lifting device, workers exposed to moving members shall be required to tie off only if they are not exposed to a greater risk from the moving member. Fall protection systems utilized shall enhance safety rather than create a secondary hazard.
   3. The Contractor shall establish procedures to minimize occurrences of unprotected exposure to fall hazards. When a worker must rig a fall protection system, and rigging cannot be accomplished from an aerial lift or by tying-off to the existing structure, momentary exposure to a fall hazard may be unavoidable.
   4. Ladders or stairways meeting the requirements of 29 CFR 1926, Subpart X Stairways and Ladders shall be provided at all points of personnel access where there is a change in elevation of 19 in or more, and no ramp, runway, sloped embankment or personnel hoist is provided. Climbing on forms, falsework, or the structure to gain access to work areas is expressly prohibited.
   5. Scaffolds necessary to provide temporary access to work areas shall be in compliance with 29 CFR 1926, Subpart L and shall include a top rail, mid rail, and toe board on all open sides and ends. Scaffolds shall be erected, moved, altered and/or dismantled only under the supervision and direction of a competent person.
   6. Suspended scaffolds may be used only if personnel lifts, scaffolds, or other means are not practical, and shall meet the requirements of 29 CFR 1926, Subpart L. Specifically, the scaffold shall be secured to the suspension cables at all times. All personnel working on a suspended scaffold shall be provided fall protection using an independent anchorage.
   7. Workers in personnel aerial lifts shall use a personal fall arrest system attached to the boom or basket. Aerial lifts shall be operated in accordance with 29 CFR 1926, Subpart L.

B. Electrical Safety. Electrical safety policy and procedures are based on the New York State High Voltage Proximity Act and 29 CFR 1926 Subpart K. They apply to all operations that could cause employees or the vehicles or equipment they are operating to come into contact with ("direct contact") or enter into dangerous proximity to ("indirect contact") energized electrical systems. Electrical systems shall be assumed to be energized high voltage until verified

otherwise by the Utility. The Contractor shall identify and reference all potential electrical hazards and document such actions to the Engineer as part of the Project Safety and Health Plan.

C. Pursuant to the High Voltage Proximity Act, for all electrical systems carrying 600 volts or more, the Contractor shall:
   1. Notify the Utility at least 5 work days before any work begins which requires the Utility to identify voltages and clearances, or de-energize, insulate or relocate lines.
   2. Ensure employees are not placed in dangerous proximity to high voltage. Dangerous proximity is defined as within 10 feet for voltages up to 50 kilovolts, and an additional 4 inches for every 10 kilovolts over 50 kilovolts. Dangerous proximity applies to the individual and any conductive object.
   3. Inform employees of the hazards and corresponding precautions when working near high voltage.
   4. Post warning decals on equipment regarding the 10foot minimum clearance.
   5. Ensure that when any equipment operator is unable to assess clearances, a "spotter" observes for clearance and directs the operator.

D. Prior to the start of work where contact with energized electrical systems is possible, the Contractor shall identify existing facilities and reference their location to prominent physical features. In advance of work, the Utility shall be called upon to identify energized facilities, and to determine the need to de-energize, insulate, or otherwise protect the facilities against accidental contact. The actual work of protecting facilities will be carried out by the Utility. Facility relocation or protection provided at the request of the Department will be as described in the contract documents. Protection provided for the benefit, or at the request, of the Contractor shall be the financial responsibility of the Contractor.

E. Energized electrical lines or equipment shall be conspicuously marked and workers shall be reminded of their locations and the safeguards and precautions to be taken prior to beginning any nearby work that may cause the workers to approach electrical lines. New employees shall be informed of electrical hazards and proper precautions and procedures.

F. Paving Operations. Prior to the start of each workday high visibility markers or other devices approved by the Engineer shall be placed to mark the location of all overhead wires, including, but not limited to electrical, telephone and cable television. As an alternative, the pavement beneath overhead lines may be marked with spray paint or by other means approved by the Engineer. This requirement shall also apply to off-site areas used for contract purposes. The Contractor shall periodically patrol the worksite to ensure that the markings are in place and shall replace any that are missing and shall maintain all markings in good condition.

G. Aerial Lifts, Lifting Equipment, Boom Devices. Where there is potential for proximity or contact with energized lines or equipment, work shall not begin until a safety meeting is conducted and appropriate steps are taken to identify, mark, and warn against accidental contact.

H. Tree Work. Branches touching wires shall be removed by the Utility before work begins. Limbs and branches shall not be dropped onto overhead wires. If limbs or branches fall across electrical wires, work shall stop immediately and the Utility shall be notified. Workers shall be equipped with appropriate personal protective gear for working near electricity.

I. Building Electrical Work. Employees working on electrical systems for buildings shall be knowledgeable about and shall employ, when appropriate, OSHA Lock-Out/Tag-Out procedures to prevent exposure to unguarded electrical systems.

J. Open Excavations and Trenches. In accordance with 29 CFR 1926.650, a trench is a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet or less, the excavation is also considered to be a trench. The Contractor shall provide protection from collapse and cave-in for any employee who enters a trench or other excavation in accordance with the requirements of 29 CFR 1926 Subpart P, unless the excavation is less than 5 feet in depth and examination of the ground by the Contractor's competent person provides no indication of a potential cave-in. The Contractor shall include procedures to meet the excavation safety requirements in the Project Safety and Health Plan.

K. Trenching and excavation work shall be carried out under the supervision of the Contractor's competent person. The Contractor shall provide ladders or ramps for access and egress within 25 feet of an employee work area if a trench is 4 feet or more deep. The Contractor shall keep traffic, equipment and materials at least 2 feet away from the edge of any trench or excavation, or use retaining devices. When mobile equipment is operated near an excavation or must approach the edge of an excavation, either the operator must have a clear and direct view of the edge of the excavation; or a warning system of barricades, hand signals or mechanical signals shall be used. Workers shall not be permitted under loads that are being handled by lifting or digging equipment.

L. For the purposes of open excavations and trenches, the term "competent person" shall be defined as one who has had specific training in, and is knowledgeable about, soil analysis, the use of protective systems and the requirements of 29 CFR 1926 Subpart P.

M. Hazardous Materials. The Contractor shall provide workers Hazard Communication Training (29 CFR 1926.59), Safety Training (29 CFR 1926.21), and other training as required by 29 CFR 1926.

N. Asbestos. Asbestos abatement contractors and workers shall be appropriately licensed and certified by the NYSDOL. The asbestos abatement contractor shall perform all removal and disposal of asbestos-containing material in accordance with Section 210 Removal and Disposal of Asbestos-Containing Material (Buildings, Bridges, and Highways).

O. Lead Safety and Health. The Contractor shall provide worker lead protection in accordance with 29 CFR 1926.62. The Contractor shall provide to the Engineer a written Lead Compliance program addressing as a minimum the specific issues listed in 29 CFR 1926.62 (e)(2), a written Hazard Communication program and Worker Lead Training program as components of the Project Safety and Health Plan. The Contractor shall provide detailed information describing the training and experience of the competent person who will supervise the compliance program on site, provide a description of procedures to monitor worker exposures to lead and provide the proposed medical monitoring program. If respirators are to be used to protect workers from lead exposure, a written respirator program shall be provided.

P. Specific operations that would likely result in worker exposure to lead include, but are not limited to:

1. Removal of lead based paint coatings by abrasive blasting or other procedures.
2. Cleanup and removal of paint debris.
3. Cleanup, relocation, and dismantling of paint removal containment structures.
4. Flame cutting, heating, or welding of steel coated with lead-based paint.
5. Removal of bolts or rivets coated with lead-based paint.
6. Any other operations that may dislodge existing coatings of lead-based paint, or subject them to abrasion or elevated temperatures.

Q. The Contractor shall identify and implement engineering and work practice controls to reduce worker exposure to lead to a level at or below the Permissible Exposure Level (PEL). The use of respirators and protective clothing shall be used to supplement engineering and work practice controls, if necessary, to protect workers from exposures above the PEL. Reliance on respirators or protective clothing to protect workers from exposures above the PEL, without first implementing feasible engineering and work practice controls, shall not be permitted except for initial assessment of exposure levels as described in 29 CFR 1926.62 (d). The removal of lead-based paint from structural steel shall be required prior to heating, welding, or flame cutting to reduce worker exposure below the PEL. In cases where the Contractor can clearly demonstrate through exposure monitoring that other work practices and engineering controls, under the oversight of a certified industrial hygienist, can effectively maintain actual worker exposure below the permissible exposure level, exceptions to this requirement may be granted by the Engineer.

R. The Contractor shall provide to the Engineer copies of documentation, as they are completed, to demonstrate full compliance with 29 CFR 1926.62. These records shall include, as applicable, the completed worker lead training, completed respirator programs, air monitoring results, exposure monitoring results, worker medical monitoring results, and other such records as are necessary to document compliance with the standard.

S. Equipment Involving Radioactive Materials. The use of equipment involving radioactive materials, including but not limited to nuclear density gauges, shall adhere to all applicable regulations, including U.S. Nuclear Regulatory Commission regulations, related USDOT regulations concerning transportation of radioactive materials, and 12 NYCRR 38. Fourteen (14) days prior to the start of any work involving such equipment, the Contractor shall submit to the Engineer a written Radiation Safety Plan. The plan shall address in detail transportation and storage of the equipment and operating and emergency procedures. It shall provide the name and address of the Contractor's Radiation Safety Officer. A copy of the owner’s license to possess the radiation source, issued by the NYSDOL, shall also be provided. All operators of the equipment shall be certified by a gauge manufacturer as to having completed training on the safe use of the equipment. A copy of the certification shall be provided to the Engineer for each operator prior to their work on the project.

T. Silica. The Contractor shall provide protection to all workers from exposure to hazardous levels of silica in accordance with 29 CFR 1926.55 and 29 CFR 19261153 Respirable Crystalline Silica. In accordance with §107-05B. Project Safety and Health Plan, the Contractor shall identify and address silica safety and health with a Silica Exposure Control Plan as a part of the written Project Safety and Health Plan. The Contractor shall provide medical surveillance to workers that are required to wear a respirator for more than 30 days per year.

U. The Contractor shall identify and implement worker training, engineering controls, work practices, and respiratory protection to reduce worker exposure to silica in accordance with 29 CFR 1926.1153. Exposure control methods shall either be fully and properly implemented in

accordance with Table 1, or the Contractor shall assess and limit the exposure of workers to respirable crystalline silica in accordance the alternative exposure control methods. The accumulation of silica dust in enclosed areas shall be controlled by means of exhaust. . Engineering and work practice control methods shall include, but shall not be limited to; dust suppression through the application of water or other methods, use of general or local ventilation, HEPA filtered vacuum systems, and containment/isolation. Work practice control methods shall include proper use and implementation of supervision, task procedures, employee training, signing, protective clothing, housekeeping, and personal hygiene. If engineering and work practice control methods cannot reduce exposures below the permissible exposure limit (PEL), the Contractor shall institute a respirator program. Each of these safety components is covered individually by 29 CFR 1926.

V. Many materials disturbed by the Contractor's operations may contain hazardous levels of silica. Silica may be in soil, concrete or asphalt pavement, superstructure or substructure materials. Exposure can occur during common construction tasks including, but not limited to:

1. Using masonry saws, grinders, drills, jackhammers and/or chipping of rock, cement concrete, or asphalt concrete;
2. Operating vehicle-mounted drilling rigs; milling; operating crushing machines
3. Concrete pavement rubblizing;
4. Using heavy equipment for demolition of brick, cement concrete, or masonry structures;
5. Abrasive blasting, if the abrasive contains silica, or of cement concrete, rock, or asphalt concrete;
6. Dry sweeping or pressurized air blowing of cement concrete, rock, sand, or asphalt concrete dust.

W. Demolition/Removal of Buildings and Structures. Demolition or removal work shall not be performed by the use of explosives

X. Equipment Safety Procedures. The following provisions shall apply to all work on the project, including but not limited to, the activities of all Subcontractors, Manufacturers, Fabricators, Material Suppliers, independent truckers and owner-operators. The Contractor shall include the proposed equipment safety procedures in the Project Safety and Health Plan.

1. A spotter shall guide the backing of any vehicle or equipment with restricted visibility to the rear. This rule applies in any location where workers on foot, pedestrians, private vehicles or similar hazards may be present.
2. If the operator loses visual contact, the vehicle shall immediately be brought to a full stop until visual contact with the spotter is reestablished.
3. Dump truck boxes may be raised only under the control of a spotter, unless the vehicle is in an area clearly marked to be free of overhead wires and safe for dumping.
4. Dump truck boxes shall be lowered prior to moving, except when dumping into a paver or similar operations, under the control of a spotter.
5. All excavating, lifting and similar equipment shall comply with electrical safety requirements, and shall operate under the control of a spotter whenever working within 5m of an overhead line. The distance shall be measured as a slope distance perpendicular from the conductor to the nearest point on the vehicle.
6. Any operator found in violation of the above rules by the Engineer or his/her representative will be removed from the project immediately, and will not be allowed to work on any Department project for a minimum of one year.

Y. Lifting. The following shall apply for all lifting operations when utilizing lift equipment. The Contractor shall conduct construction lifting operations that use a crane or a derrick in

compliance with 29 CFR 1926 Subpart CC Cranes and Derricks in Construction and shall conduct lifting operations for demolition and underground construction that use a crane or a derrick in compliance with 29 CFR 1926 Subpart DD Cranes and Derricks Used in Demolition and Underground Construction. This paragraph does not apply to lifting operations covered under Section 585 Structural Lifting Operations, nor ordinary excavation operations. This paragraph does apply to cranes with either fixed or swinging leads that are dedicated to pile driving operations.

Z. Lift Equipment. Lift equipment is defined as equipment capable of lifting an item more than 15 feet high, has the ability to swing or rotate a boom, and has a maximum rated lifting capacity exceeding one ton. Lift equipment shall have durable, legible load charts which shall have been prepared by either the equipment manufacturer or a Professional Engineer. If manufacturer's load charts are unavailable, charts may be prepared by a Professional Engineer. The Professional Engineer shall utilize the same factors of safety against overturning as the equipment manufacturer. The charts shall be attached to the equipment in a location accessible to the operator while at the controls. The charts shall contain a full range of load ratings at all stated operating radii. The charts shall also note conditions such as outriggers, counter weights, and work area, i.e., over side, over front, or over rear of equipment.

AA. Equipment may lift loads up to those indicated on the Manufacturer's or Professional Engineer's load chart if the equipment has the following safety devices and the safety devices are operating:

BB. Load and radius measuring device pre-programmed to continuously relate the measured data to the load radius chart as a direct reading of load or percentage of the rated load, and connected to a warning light and an acoustical signal located at the operator's position or in the cab to indicate overload.

CC. A device that continuously indicates the levelness of the machine and is visible from the operator's controls.

DD. Lift equipment with non-operational safety devices or no safety devices shall be operated at levels not to exceed 78% of the Manufacturer's or Professional Engineer's load charts. This equipment shall have a separate load chart labeled 78% Load Chart and it shall be attached to the equipment.

EE. Lift Equipment with operational safety devices that is operating from a barge shall utilize a manufacturer's or Profession Engineer's load chart that is established specifically for operating from a barge. Lift Equipment on barges with non-operational safety devices or no safety devices shall operate at 78 % of the Manufacturer's or Professional Engineer's load chart for working on barges. This equipment shall have a separate load chart labeled 78% Load Chart for Equipment on Barges.

FF. Equipment used for lifting over a railroad shall be restricted such that the operational capacity shall be limited to 66 2/3% of its tipping load as specified in §105-09 Work Affecting Railroads or be limited to the load limits indicated in the previous three paragraphs, whichever is lower.

GG. Lift Plans. A written lift plan may be a component of an Erection Plan, Demolition Plan, or other plan that is submitted and approved by the Department in accordance with the Steel Construction Manual, the Prestressed Concrete Construction Manual or other requirement. A

written lift plan need not be submitted separately for approval, provided the required minimum elements are contained in the approved plan.

HH. Structural elements shown on shop drawings and erection drawings may have units expressed in both metric and USC units, however the measurements or dimensions in the predominant unit system used in the contract documents shall control.

II. Type A Lifts. A Type A Lift is the most complex type of lift, poses a greater risk, and requires significant prior planning. Type A lifts include, but are not limited to lifting primary structural steel or structural concrete elements, span type overhead sign structures, arm type overhead sign structures with a lift weight greater than 20,000 lbs.

JJ. A lift will also be considered Type A when lift equipment to perform a Type B lift is placed on a bridge structure, on false work; over a railroad; over a sensitive underground utility facility; when there is a two machine lift; or when a slider beam is used.

KK. The Contractor shall submit a written Type A Lift Plan to the Engineer 30 calendar days prior to the lift for review and approval by the Department and, when applicable, any railroad affected by the proposed procedure. The Type A Lift Plan and supporting calculations shall be sealed and signed by a Professional Engineer. Any and all alterations or modifications to a Type A Lift Plan shall be sealed and signed by a Professional Engineer. The Engineer shall be notified of any alterations or modifications to approved lift plans.

LL. As a minimum, a Type A lift plan shall include the following:

1. Title Block with contract number, PIN, contract description, county, contractor name and bridge identification number (BIN)/or sign identification number (SIN) as appropriate.
2. Plan of the work area showing support structures, roads, railroad tracks, canals, streams and utilities.
3. Lifting sequence, if applicable
4. Location of trucks for delivery or removal of materials.
5. Location of lift equipment, including pin locations, length of boom, and counterweight size and location.
6. Lift radii, lift configuration(s) and restrictions on swing radii.
7. Capacity chart for lift equipment, including a comparison of total lift weight vs. capacity for the pick radius.
8. Weight of the item to be lifted, including additional equipment such as rigging, beam clamps, jibs, swing-away, super-lifts, blocks, cheek plates, headache balls, and cables
9. Wind restrictions if they are requirements of the Manufacturer.
10. Sectional views of all lifts where electrical facilities are within a 15 foot radius of any part of the lifting equipment or object being lifted.
11. Description of lifting devices or other connecting equipment, and pertinent rigging with dimensions.
12. Location of outriggers, outrigger supports, and outside dimensions of tracks for track mounted lifting equipment.
13. Cranes or crane outriggers shall not be placed on a reinforced earth structure, within the limits specified, during a lift.

MM. Type B Lifts. A Type B Lift includes arm type overhead sign structures with a lift weight less than 20,000 lbs, structural elements with a lift weight greater than 20,000 lb; when the lift equipment or the item being lifted is within 15 feet of energized overhead electrical lines, or where the operator cannot directly see the item being lifted at all times during the lift.

NN. The Contractor shall submit a written Type B Lift Plan, including all of the applicable elements required for a Type A Lift Plan, prepared by the Competent Person.

OO. Type C Lifts. A lift will be considered a Type C Lift when it does not meet the requirements for a Type A or Type B Lift. A written lift plan is not required for Type C Lifts.

PP. Pre-Lift Meeting.

1. Type A Lifts. A pre-lift meeting will be required for lifts that require a Type A Lift Plan, a written Erection Plan, Demolition Plan, or other requirement that includes a lift plan. The Competent Person, and other appropriate contractor staff, shall attend the pre-lift meeting with the Engineer, as well as representatives from the utilities and railroads if deemed applicable, a minimum of five work days before lifting operations are to be performed. The meeting shall include but not be limited to: the review of site conditions, erection or demolition plans, lift loads vs. lift equipment capacity, obstructions, utilities, and the roles of Department and Contractor personnel.
2. Type B Lifts. The Competent Person, and other appropriate contractor staff, shall review the lift operations with the Engineer at the location of the lift, before lifting operations are performed. The review shall include but not be limited to: the review of site conditions, lift loads vs. lift equipment capacity, and obstructions, and the roles of Department and Contractor personnel.
3. Type C Lifts. A pre-lift meeting is not required for Type C lifts.

QQ. Competent Person. The Contractor shall designate, to the Engineer, one person, who is competent in lifting operations, to be completely in charge of each lifting operation. In general, Competent Person shall mean one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. The Competent Person shall have the authority to take an unsafe piece of equipment out of service until the hazard is eliminated. The Competent Person shall be knowledgeable about lifting equipment and equipment operations, Manufacturer's specifications and recommendations, and have a thorough knowledge of the requirements, regulations and standards governing his/her duties. The Competent Person shall, as a minimum, have the ability to interpret load charts, calculate lift loads, recognize overhead wire hazards and know all aspects of the rigging.

1. The Competent Person shall inspect all lift equipment prior to and during usage to make sure the equipment is in a safe operating condition.
2. Lift Operations. The Competent Person shall be present for all lifting operations. If a crane is utilized in a lifting operation, or a crane with either fixed or swinging leads is utilized in a pile driving operation, the operator shall present to the Engineer a valid New York State Certificate of Competence to operate a crane, except an individual operating a crane within a city having a population of one million or more. Individuals operating a crane within a city having a population of one million or more shall present the Engineer with a valid license or certification to operate a crane issued by such city. If there are any other local crane license requirements, they too shall be presented to the Engineer. In addition, a copy of the annual inspection report of the crane shall be readily available and provided upon the Engineer's request.
3. Any crane or other lift equipment that extends into the identified sloped test surface around an airport, military airport or heliport, or 200 feet or more above ground level, as defined in 14 CFR Part 77.9 shall have the appropriate flags, lights, beacons or markings in accordance with Federal Aviation Administration (FAA) Advisory Circular

(AC) 70-7460-1K Obstruction Marking and Lighting, and the owner shall file a Notice of Proposed Construction or Alteration with the FAA.

4. Any discrepancies between the Lift Plan and the actual lift conditions shall be reported immediately to the Competent Person in charge of the lift operations and to the Engineer. The operation shall not proceed until all issues are resolved.

RR. Histoplasmosis. Histoplasmosis is a fungal infection caused by a soil organism found in large masses of bird or bat droppings, and is a potential health hazard in areas where birds or bats have nested for long periods. Such conditions are often found on bridge structures, in barns, farm buildings and cold storage facilities. Areas with small amounts of dried droppings pose minimal hazard. Airborne material may enter the body by inhalation or ingestion.

SS. Prior to work in any area where birds nest or bats roost, the Contractor shall conduct a thorough inspection to determine if, and to what extent there is a build-up of droppings. Workers conducting an inspection shall be equipped with personal protective equipment, which include gloves, rubber boots, rain suit components, goggles and a dust/nuisance respirator. Questions regarding proper equipment for this activity shall be directed to the Engineer.

1. If substantial material is found, the Contract shall clean the work area using a high-powered water hose or by scraping. If the material is to be scraped away, it shall be kept wet during the entire process. Workers engaged in cleaning activity shall wear personal protective equipment specified above.
2. Application of a cleaning agent (bleach, for example), before removal may help dissolve the material, and a disinfectant shall be applied to cleaned surfaces. No solvents or chemical cleaning agents shall be dispersed into waterways when cleaning surfaces. Compressed air shall not be used to remove bird droppings because it produces airborne particles and exposure to particles may cause histoplasmosis.
3. When cleaning has been successfully completed, the personal protective equipment specified above is no longer required. Employees engaged in cleaning, or any other activity which involves exposure to bird droppings, shall observe a high degree of personal hygiene, even if the exposure is casual. Special care shall be taken to wash hands thoroughly before eating or smoking.

TT. Confined Spaces. Confined spaces are defined as any space having limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficientatmosphere. Confined spaces include, but are not limited to: sanitary sewers, sanitary manholes and structures, drainage lines and drainage structures, underground utility vaults, enclosed bridge beams and heated enclosures. All personnel required to enter confined spaces shall be instructed as to the nature of the hazards, the necessary precautions and in the use of protective and emergency equipment required.

UU. Fuel-fired heated enclosures are frequently constructed to provide the requirements for winter concrete placement or similar operations. The Contractor shall provide adequate ventilation to maintain acceptable air quality or conduct air quality monitoring when heaters are or have been operating prior to personnel entry. If acceptable air quality cannot be verified, then appropriate respirators shall be worn. No worker shall enter a confined, heated space unless that space can be ventilated or the worker removed from outside the enclosure if the worker is overcome by fumes. Particularly during off-shift hours, no worker shall enter an unventilated, heated enclosure unless another worker is present immediately outside the enclosure. All unnecessary combustibles and debris shall be removed from the enclosure and escape exits shall be provided so workers can escape safely if a fire starts, prior to heating.

VV. Fire and Explosion Prevention. The Contractor shall ensure that combustibles do not accumulate. Flammable materials shall be handled and stored as required by OSHA regulations. "No Smoking" signs shall be posted and enforced wherever flammable materials are stored or used. Fire extinguishers shall be provided and maintained throughout the site, in accordance with the requirements of 29 CFR 1926, Subpart F. Fires will be considered, as a minimum, a near-miss accident, and therefore shall be reported in accordance with existing reporting requirements.

WW. During refueling, all possible sources of ignition, including, but not limited to sparks, open flames and electrical equipment shall be eliminated. Fuel containers shall be grounded to the tank to prevent static electrical sparks. A "No Smoking or Open Flame" sign shall be posted conspicuously in the vicinity of refueling operations.

XX. Cutting and welding equipment shall be stored according to recognized safety standards. Any defective tanks or equipment shall be removed to a safe storage area immediately until repairs are made. When cutting or burning is underway, steps shall be taken to ensure that sparks do not ignite combustibles.

YY. Use of Personal Entertainment Devices and Portable Phones. The Contractor shall ensure that workers are able to perceive hazards, are not distracted from their tasks, and are not creating hazard(s) through the use of personal entertainment devices. The Contractor shall ensure that portable phones, two-way radios, and other communication devices are used by workers for performing work tasks only. Flaggers shall use portable phones, two-way radios, and other communication devices only to communicate with other flaggers, workers or supervisors regarding flagging operations. Equipment operators shall use portable phones, two-way radios or other communication devices while actively operating equipment only for communicating with workers performing directly related work tasks. Truck drivers shall use hands free technology for all calls while driving within work zones. Portable phones, two-way radios, and other communication devices shall be equipped with hands-free technology whenever practicable. Workers shall not use personal entertainment devices with earphones such as radios, cellular/smart phones, portable media players, or other personal listening devices while working.

1.20 ACCIDENTS

A. Contractor shall provide at the site such equipment and medical facilities as are necessary to supply first-aid service to any of its personnel who may be injured in con¬nection with Work. Contractor shall promptly report in writing to Owner all accidents whatsoever aris¬ing out of, or in connection with, the performance of Work, whether on or adjacent to the site, which caused death, personal injury or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immedi¬ately by telephone or messenger to both Consultant and Owner. If any claim is made by anyone against Contractor or a subcon¬tractor on account of any accidents, Contractor shall promptly report the facts in writing to Owner, giving full details of the claim. In addition, Contractor shall comply with OSHA Regulations (including but not limited to 29 CFR Parts 1910 and 1926) in the investi¬gation and reporting of acci¬dents, job-related ill¬nesses, etc.

1.21 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.
4. The contract Drawings are intended to agree with the Specifications. Should any discrepancy arise between them or any error, discrepancy, or inconsistency appear or occur in Drawings or Specifications or in work performed by other Contractors employed by Owner, Contractor, before proceeding with the Work, shall contact Architect for clarification and in no case shall Contractor proceed with the Work until advised in writing by Architect. Where work is shown schematically on the bid Drawings, Contractor shall be responsible for the proper arrangement of its Work to avoid interferences with adjacent work.

D. Industry standards, codes, and specifications

1. Wherever reference is made to any published standards, codes, or standard specifications, it shall mean the standard code, specification, or tentative specification of the technical society, organization, or body referred to, which is in effect on the date of the Work. Where specified articles, sections, paragraphs, or other subdivisions of the referenced publications are not stated, the referenced publication shall apply in full. Where a date is indicated for a standard, code, or standard specification, the latest or most recent revision in effect at the date of the Work shall apply.

2. The following is a partial list of typical abbreviations which may be used in the Specifications and the organizations to which they refer:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AIA	American Institute of Architects
AISC	American Institute of Steel Construction

ANSI	American National Standards Institute
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
Fed. Spec.	Federal Specifications
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
OSHA	Occupational Safety and Health Administration
CRSI	Concrete Reinforcing Steel Institute

3. Contractor, when required, shall furnish evidence satisfactory to Owner that materials and methods are in accordance with such standards, as required. Such standards, codes, and specifications shall be construed to be the minimum requirements of Contract Documents.

1.22 RECORD DRAWINGS

A. Contractor shall perform all survey work required for the location and construction of Work, and for the recording of information necessary for completion of the record drawings. Record drawings shall show the actual location of the Work in the same manner as was shown on the bid drawings. All elevations and dimensions shown on the drawings shall be verified or corrected so as to provide a complete and accurate record of the facilities as constructed.

B. Contractor shall mark each sheet of the non-reproducible drawings in pencil and record thereon, in a legible manner, any and all approved field changes and conditions as they occur. A complete file of approved field sketches, diagrams, and other changes shall also be maintained and attached to the as-built set of drawings. At completion of the work, each sheet of as-built prints, plus all approved field sketches and diagrams, shall be certified as reflecting as-build conditions and submitted to Owner or Consultant, for its approval and use in preparation of Record Drawings and in establishing the value of the work to be specified in the final certificate.

C. Owner will record all approved field changes and conditions on the reproducible record drawings. Each sheet will be signed by Owner, and will be certified as reflecting "as-built" conditions by a licensed engineer, architect, landscape architect, or surveyor, as appropriate, employed by Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011200

CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)

FOR THE

New Hangar 3 Building

AT

CHAUTAUQUA COUNTY - DUNKIRK AIRPORT

5905.94

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CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)

1.0 PURPOSE.

Aviation safety is the primary consideration at airports, especially during construction. The airport owner's Construction Safety and Phasing Plan (CSPP) and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard.

The CSPP sets forth benchmarks and requirements for the project to help ensure the highest levels of safety, security and efficiency at the airport at the time of construction. Requirements for this CSPP were developed from FAA Advisory Circular (AC) 150/5370-2 Operational Safety on Airports During Construction, latest edition.

T**he CSSP is an integral component of the Construction Contract.** It is also a "freestanding" document, written to convey the safety and security requirements set forth in the AC, the airport safety and security requirements, and local codes and requirements. The CSPP is to be used by all personnel involved in the project. The CSPP covers the actions of not only the construction personnel and equipment, but also the action of inspection personnel and airport staff.

This document has been developed in order to minimize interruptions to airport operations, reduce construction costs, and maximize the performance and safety of construction activity. Strict adherence to the provisions of the CSPP by all personnel assigned to or visiting the construction site is mandatory.

The Contractor shall submit a Safety Plan Compliance Document (SPCD) to the airport owner describing how the Contractor will comply with the requirements set forth in this CSPP. The SPCD must be submitted to the airport owner prior to issuance of Notice to Proceed.

In the event the Contractor's activities are found in non-compliance with the provisions of the CSPP or the SPCD, the Airport Owner's Representative will direct the Contractor, in writing, to immediately cease those operations in violation. In addition, a safety meeting will be conducted for the purpose of reviewing those provisions in the CSPP/SPCD which were violated. The Contractor will not be allowed to resume any construction operations until conclusion of the safety meeting and all corrective actions have been implemented.

2.0 SCOPE OF PROJECT AND CSPP.

The project consists of the construction of a new 5,000 square foot Hangar 3 located adjacent to existing Hangar 8 at the Dunkirk Airport. Work will include the preparation of the building pad for the erection of a pre-engineered metal building, inclusive of water, sewer and power laterals. Minor grading and site restoration.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport owner must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities and associated costs will be identified. As they are identified, their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project and/or to airport operations in order to maintain operational safety. This planning effort will ultimately result in a project CSPP. The development of the CSPP takes place through the following four steps:

1. Identify Affected Areas
2. Describe Current Operations
3. Allow for Temporary Changes to Operations
4. Take Required Measures to Revise Operations
   Manage Safety Risk

3.0 PLAN REQUIREMENTS.

3.1 COORDINATION. The following items shall be coordinated as required:

a. Pre-construction Meeting. A preconstruction meeting will be conducted to discuss operational safety, testing, quality control, quality acceptance, security, safety, labor requirements, environmental factors, and other issues. All parties affected by the construction will be asked to attend including, but not limited to, the airport owner, FBO representatives, tenants, contractor, subcontractors and Engineer.

At the preconstruction meeting, the Contractor shall submit a plan of operation and schedule of work to the Engineer for approval. The Contractor's plan of operation shall indicate, in detail, the amount of construction planned and the number of shifts and/or overtime operations proposed for the project. The schedule of work shall clearly indicate the sequence of work to be performed. The Contractor shall conform, at all times, to the requirements of these provisions and with current safety practices, rules, regulations and security requirements of Airport Owner. The preconstruction meeting will be held prior to issuance of a Notice to Proceed.

b. Contractor Progress Meetings. A minimum of one progress meeting to discuss scheduling and coordination shall be held each week unless otherwise directed by the Airport Owner, throughout the duration of the Contract, between the Airport Owner, Contractor, Engineer and any other interested parties at a time and place to be designated by the Airport Owner. These meetings shall include a detailed discussion of construction phasing and safety with regard to the Contractor's compliance with the requirements stipulated in the Contract Documents.

In attendance at these meetings shall be a Contractor's representative with the authority to make decisions concerning the scheduling and coordination of work. Progress meetings shall be facilitated by the Engineer. Operational safety shall be a standing agenda item during progress meetings throughout the construction project.

c. Scope or Schedule Changes. Changes in the Scope of Work or Project Schedule shall be governed by Division 1 of the Contract Documents. Any proposed change that results in a deviation from the established CSPP as expressed by the Contract Documents must be submitted to the FAA and Owner for review and approval. FAA review and approval can be expected to take sixty business days.

d. FAA ATO Coordination. Early coordination with Federal Aviation Administration (FAA) Air Traffic Organization (ATO) is required to schedule airway facility shutdowns and restarts. Relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, may require an FAA flight inspection prior to restarting the facility. Flight inspections shall be coordinated and scheduled well in advance of the intended facility restart. Flight inspections shall be as required by technical specifications or special provisions. NO Work impacting airway facilities at the Dunkirk Airport is included in the scope of the Hangar 3 renovation contract.

Payment. The cost of complying with the requirements of this section, including but not limited to scheduling; providing flag people; construction, maintenance and removal of temporary access roads and staging areas; providing, placing, relocating, maintaining and removing temporary barricades; providing and placing permanent barricades; protection of aircraft and vehicular traffic; installation, maintenance and removal of temporary airfield markings; maintenance of airport lighting circuits; installation, maintenance, and removal of temporary wiring and airfield lighting facilities; cleaning of paved surfaces; restoration of surfaces disturbed as a result of the Contractor's operations; providing, maintaining, and removing warning signs, hazard markings, barricade lights; providing, maintaining, and removing temporary access gates; providing padlocks for access gates; providing a

guard at access gates; and all security requirements shall be included under Technical Specification Item M-100, Maintenance and Protection of Traffic.

3.2 PHASING.

a. Phase Elements (Work Area(s))

Phase Descriptions: The work in this project will be completed under one Phase. Access to neighboring Hangar 8 and adjacent apron are to remain active during construction. Refer to the overall site plan (C001) for contractor access and/or any staging locations.

b. Construction Safety Requirements

The Contractor shall obtain approval from the Engineer prior to beginning any work in all areas of the airport. No active runway or taxiway shall be crossed, entered, or obstructed at any time. The Contractor shall plan and coordinate his/her work in such a manner as to insure safety and a minimum of hindrance to airport operations. All Contractor equipment and material stockpiles shall be stored at locations determined during construction or as shown on the Construction Safety Drawings (see overall site plan).

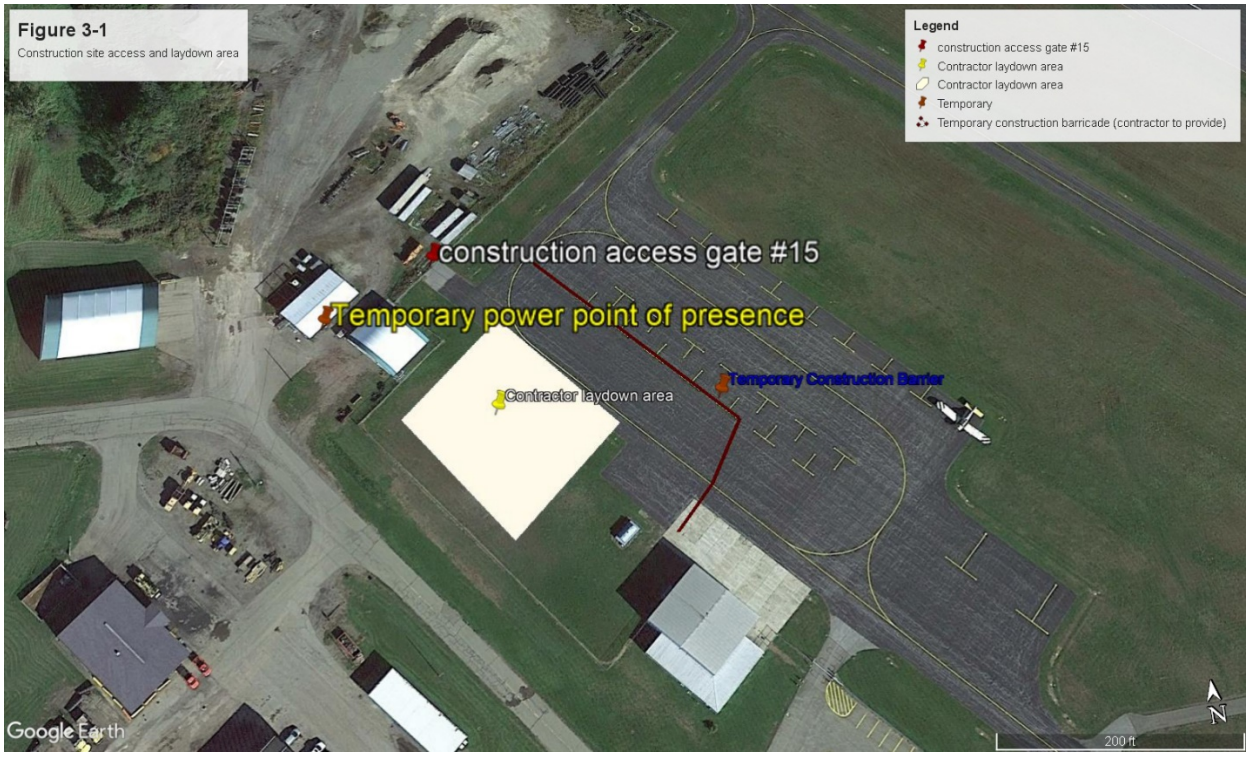
During the work under this Contract, the Owner and FBO will make such arrangements to coordinate aircraft movements as necessary to conform to the construction procedures as outlined below and as shown on the Contract Drawings. The Contractor shall give adequate notice to the Engineer, so as to afford time to coordinate construction with the Owner. No work shall proceed in any area without prior approval.

The Contractor shall always confine construction operations to the contractor work area and designated haul routes. Contractor personnel, equipment, stored materials, subcontractors and suppliers will not be allowed on any other area within the Air Operations Area and within the Airport boundaries without prior approval of the Owner or Engineer.

The Engineer will perform a visual site assessment before the Contractor occupies the contractor work area. The Contractor shall be held responsible for all repairs and cleanup costs incurred as a result of the Contractor's construction operations. Restoration shall be the complete return of all work areas to the original condition.

Temporary cables in grass areas shall be marked with stakes and flagging. Temporary cables in paved areas shall be marked with barricades.

The Contractor shall access the project area through Gate 15 as shown on Figure 3.1. This shall be the primary access to the project site. The contractor is responsible for maintaining security at all time. A gate guard shall be provided by the contractor as needed or the gate shall remain locked when it is not being used. The General Superintendent shall be responsible for controlling access to the site through gate 15 for all contractor personnel, subcontractors and deliveries.



Prior to the start of construction operations, the Contractor shall perform the following:

- Submit an on-line Obstruction Evaluation requests (Form 7460-1) for cranes or other construction equipment that extend above the peak of the hangar.
- Erect temporary vehicle barriers to prevent delivery vehicles from accessing active aircraft movement surfaces (taxiways and taxilanes).

At the conclusion of construction operations, the Contractor shall perform the following:

- Remove barricades, temporary jumpers and closed runway markings.
- Clean all paved surfaces in accordance with Item M-100, Maintenance and Protection of Traffic.
- Coordinate cancellation of the NOTAMs with the Airport Owner and Engineer.
- Remove and restore temporary electrical, water and other utilities.

3.3 AREAS AND OPERATIONS AFFECTED BY THE CONSTRUCTION ACTIVITY.

Contractor, subcontractor, and supplier employees or any other unauthorized persons shall be restricted from entering an active airport operating area without previous permission from the Airport Owner and the Aircraft Control Tower.

In an emergency situation, the Owner or other designated airport representative may order the Contractor to suspend operations; move personnel, equipment, and materials to a safe location; and stand by until aircraft use is completed.

The Contractor shall cooperate with the airport users through the Engineer, in coordination with airport operations, in scheduling the operations to provide adequate clearance for safe aircraft parking, fueling, maintenance, loading or unloading, maneuvering, taxing operations, or other aircraft operations.

a. Identification of Affected Areas

The following is a summary of impacts to the Airport Operations Areas resulting from the proposed construction safety and work phasing requirements:

Table 3.3A Construction Effect on Airport Operations		
Project	Construction of New Hangar 3	
Phase	Work Area (See Section 3.2.a for description)	
Operational Requirements	Normal (Existing)	Anticipated (During Construction)
Scope of Work	Construction of a pre-engineered metal building and associated utility and site work.	
RW 15-33 Including Taxiway B Average Aircraft Operations	Carrier: 0/day	Carrier: 0/day
	GA: 10/Day	GA: 10/Day
	Military: 0/Day	Military: 0/Day
Hangar 8 Apron and Taxilane	GA: 10/day	GA: 10/day

Mitigation of effects.

This CSPP has established specific requirements and operational procedures necessary to maintain the safety and efficiency of airport operations during the construction of this project.

All coordination pertaining to airport operations during construction will go through the Owner's Representative and the Airport Operations Manager. Any required NOTAM's to be issued will be sent through the Owner's Representative and issued by Airport Operations.

i. Temporary Changes to runway and/or taxiway operations:
Any affected Airport Operations Areas identified in the previous section for reduced access or identified as being closed entirely to aircraft traffic, will be barricaded by the use of low profile, lighted barricades placed as shown in Figure 3.1. Detours for ARFF and other airport vehicles:
The project work site shall remain open to all emergency vehicles in emergency situations. The contractor is required to maintain access in and around the project work area for all emergency vehicles. Proper routing of this traffic will be effectively communicated to all supervisory personnel involved in the construction project.

ii. Maintenance of essential utilities:
Special attention shall be given to preventing unscheduled interruption of utility services and facilities. Where required due to construction purposes, the Owner and FAA shall locate all of their underground utilities. It is the Contractor's responsibility to have the locations of cabling and other underground utilities marked prior to beginning excavation. Any locations provided by the Owner or FAA are approximate locations and the Contractor shall verify all locations prior to beginning excavations. When an underground cable or utility is damaged due to the Contractor's negligence the Contractor shall immediately repair the affected cable or utility at his/her own expense. Full coordination between airport staff, field inspectors, and construction personnel will be exercised to ensure that all airport power and control cables are fully protected prior to any excavation.

iii. Temporary Changes to air traffic control procedures:
Changes to air traffic control procedures have been coordinated with airport ATO. Any additional requests for changes must be made to the Owner, through the Engineer, in writing.

These requested changes will be reviewed by the Engineer, Owner and ATO. If these changes are acceptable to all the aforementioned parties, the Engineer will request a modification to the CSPP previously turned into the FAA. The Contractor shall plan on a minimum 90 days for this process to be completed. No deviation to the original CSPP shall be made without final FAA approval.

3.4 PROTECTION OF NAVIGATIONAL AIDS (NAVAIDS).

3.5 Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordination with the appropriate FAA ATO to evaluate the effects of construction activity and the required distances and direction from the NAVAID is required. Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs are not anticipated in this project.CONTRACTOR ACCESS.

This section of the CSPP details the areas to which the contractor must have access, and how contractor personnel will access those project work areas.

a. Location of stockpiled construction materials.

The Contractor shall store material and equipment and schedule his operations for work to be done so that no unauthorized interference to normal Airport operations will result there from. Construction operations shall not be conducted in a manner to cause interference with Airport Operations. Stockpiled materials and equipment storage are not permitted within the Runway Safety Area/ Taxiway Safety Area (RSA/TSA), Obstacle Free Zone (OFZ) or Object Free Area (OFA) of an operational runway or taxiway. Stockpiled construction materials must be located inside the contractor staging area as shown on the Construction Safety Drawings (Appendix 1) unless otherwise approved by the Engineer.

Stockpiled material shall be constrained in a manner to prevent movement resulting from either aircraft jet blast or wind conditions in excess of ten miles per hour. In addition, stockpiled material shall have silt fence located around the material to prevent Foreign Object Debris (FOD) from moving onto the airfield pavements or polluting watercourses.

Open trenches exceeding 3 inches in depth and 5 inches in width or stockpiled material are not permitted within the limits of safety areas of operational runways or taxiways. Stockpiled material shall not be permitted within the protected areas of the runways, or allowed to penetrate into any of the protected airspace.

Spoil and Disposal Areas: Spoil shall be disposed of offsite by the contractor unless otherwise shown or specified. The Contractor shall submit the "Spoils Deposition Release Form" for any spoils which are transported from the project site. A copy of the form can be found in Appendix 4. No direct payment will be made for spoiling and disposal operations. The cost of spoiling material on site, or of spoiling material off-site, shall be considered incidental to this Contract and the costs shall be included in the various pay items involved.

b. Vehicle and pedestrian operations. <u>Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the Air Operations Area (AOA).</u>

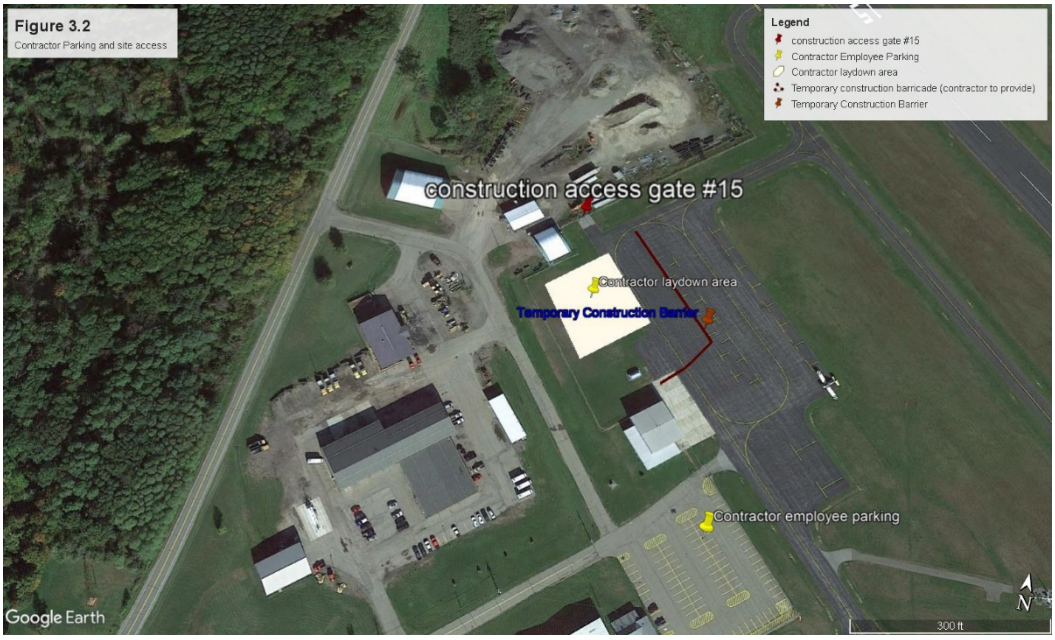
The airport owner will coordinate requirements for vehicle operations with the affected airport tenants. Specific vehicle and pedestrian requirements for this project are as follows:

All construction vehicles and personnel shall be restricted to the immediate work areas specified by the contract for this project. These areas include the haul routes into the work area, the designated contractor staging area and the apron area under construction. Use of alternate haul routes or staging

areas by the contractor shall not be permitted without prior notification and approval by the Owner's Representative.

i. Construction Site Parking:

The Contractor's personal vehicle parking area shall be in the airport public parking area, as shown in Figure 3.2. Contractor personal vehicles will not be allowed inside the airport fence Air Operations Area (AOA) or secured staging area.



Construction Office:

The Contractor may furnish/install temporary power service for an on-site construction office trailer from the County Airport equipment building as noted in Figure 3.1. The contractor shall make his own arrangements for, and bear all costs of all other required utilities. The Contractor shall use and maintain the site in accordance with requirements of the Owner. Upon completion of work, the Contractor's staging area shall be removed and the area cleaned and restored to original or better condition.

ii. Construction Equipment Parking:

The Contractor's equipment storage area shall be in the contractor staging area as shown on the Construction site plan, Figure 3.1. The Contractor's equipment and construction vehicles shall be restricted to the construction site or storage areas during construction and parked in the equipment storage area during non-working periods. Maximum allowable equipment height in the staging area shall be 20 feet. Maximum allowable equipment height in the work areas shall be 20feet.

Contractor must service all construction vehicles within the limits of the project work area or the Contractor's Staging Area. Parked construction vehicles must be outside the OFA and never in the safety area of an active runway or taxiway. Inactive equipment must not be parked on closed taxiways or runways. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees shall also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT, as applicable, to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids.

iii. Access and Haul Roads:

The Contractor shall clear, construct and maintain haul routes as required for the prosecution the work. The haul routes and access points shall only be in the locations approved by the Engineer and the Owner.

Access or haul routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Construction traffic must remain on the designated haul routes, never straying from the approved paths. Haul and access routes shall be clearly delineated with temporary marking and signage by the Contractor. Signage and marking placement shall be reviewed and approved by the Engineer and Owner prior to being put into service. The Contractor shall fully describe the appropriate access routes to all his/her employees, subcontractors and material delivery personnel.

The Contractor shall be responsible for maintaining existing haul routes. At the completion of the project, these areas shall be returned to their original lines and grades and shall be restored to a condition equal to or better than original. All non-paved areas that are disturbed by Contractor's haul roads, staging area, etc., located outside of the seeding limits shown on the plans shall be re-seeded and restored to their original or better condition by the Contractor at no additional cost to the Owner.

The Contractor shall coordinate haul routes, closures and schedules with other projects which may be underway during the same time period as this contract.

The Contractor shall control and coordinate the material (supplies) that are hauled to and from work area. Delivery of equipment and materials to the area of work shall be by way of the access route shown in Figure 3.1 or designated by the Owner or Engineer.

The Contractor shall maintain all haul routes and work areas in a dust free condition at all times. The Contractor shall control dust from the construction operations by vacuum type sweeping, watering or other methods as approved by the Engineer. Contractor shall have equipment (in operating condition) on site, at all times, to control dust. If the Contractor fails to comply with this requirement, construction will be suspended until a plan for controlling the dust is approved by the Engineer. Landside haul routes, boulevards and drives shall be kept clean by use of a vacuum sweeper on a daily basis as required. Application of water on dirt or gravel haul routes must be provided as often as necessary. Haul roads in any airport traffic areas must be especially monitored for dust and debris to prevent any potential Foreign Object Debris (FOD) situations.

Portions of the project area(s) shall be bounded by the low profile barricades identifying Contractor personnel and vehicle area operation limits.

iv. Marking and Lighting of Vehicles:

When any vehicle or piece of equipment, other than one that has prior approval from the Owner, must operate on an airport, it shall be escorted and properly identified.

The Contractor shall limit access within the airport security fence to authorized vehicles. All authorized vehicles shall have a vehicle dash board placard permit issued by the Owner or an identification sign on both sides of the vehicle containing the Contractor's company name. Private vehicles of the Contractor's personnel must be parked outside the airport security fence and will not be allowed within the airport security fence at any time.

All vehicles operating on the airport and in the general vicinity of the safety area or in aircraft movement areas must be marked with flashing yellow/amber beacons or orange and white flags during daylight hours. During hours of darkness or low visibility they shall be marked with at least flashing yellow/amber beacons. Beacons and flags must be maintained to standards and in good

working and operational condition. Beacons must be located on the uppermost part of the vehicle structure, visible from any direction, and flash 75 +/- 15 flashes per minute. Flags shall be 3' by 3' with alternating 1' by 1' international orange and white squares, and shall be replaced by the contractor if they become faded, discolored, or ragged as determined by Airport Operations or the Owner's Representative.

v. Description of Proper Vehicle Operations:

The Contractor shall be required to follow guidance on the additional identification and control of construction equipment per the Airport's Security Plan. No Contractor's vehicle or pedestrian crossing of active runways or taxiways will be allowed at any time during the work of this Contract, unless otherwise specified. No deviation from the pedestrian and vehicle routes to and from the Project Areas will be allowed unless specific permission has been granted by the Owner.

The ground movement of aircraft shall have the right-of-way at all times, and the Contractor's vehicles and equipment shall yield to aircraft at all times.

vi. Required Escorts:

Anyone not in possession of a current airport badge shall be escorted by an appropriately badged person. At no time will vehicles or personnel enter portions of the secure AOA outside the contract area unless permitted and accompanied by an airport approved escort.

All construction-related activity taking place within any airport defined movement area requires the presence of an authorized Airport escort having radio communication with the FAA control tower or UNICOM unless prior approval is obtained from Airport Operations. Spotters and/or flaggers having radio or telephone contact with the Airport may be used with the approval of the on shift Airport Operations Manager.

At no time shall active taxiways or taxilanes be crossed by construction equipment without notification and proper approval/clearance from radio-trained gate guards or Airport Operations.

vii. Training Requirements for Vehicle Drivers:

Any employees the Contractor would request to be given permission by Airport Operations to drive on the AOA shall complete airport badging and driver training per the Airport's requirements. These employees then must have an airfield driving experience with Airport Operations and if Airport Operations is satisfied of the employee's competency, that employee may be granted permission from Airport Operations to drive on the AOA. Passing the AOA driver training does not given the Contractor's employees the ability to drive on the AOA.

viii. Situational Awareness:

Aircraft traffic will continue to use existing runways, aprons, and taxiways of the Airport during the time that work under a contract is being performed. The Contractor shall, at all time, conduct the work as to create no hindrance, hazard, or obstacle to aircraft using the Airport.

Vehicle drivers must confirm by personnel observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time.

ix. Two-way Radio Communication Procedures:

Two-way radio communications are not required between Contractors and Airport Aeronautical Advisory Stations (UNICOM/CTAF). Vehicular traffic shall not be allowed in or on an active movement area.

x. Maintenance of the Secured Area of the Airport.

Airport owner and contractors must also maintain a high level of security during construction when access points are created in the security fencing to permit construction vehicle access. Temporary gates shall be equipped and/or manned by construction personnel to prevent unauthorized access by vehicles, animals or people. Procedures conforming to Airport security protocols should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit "piggybacking" behind another person or vehicle. Access shall be made available at all times to all airport emergency vehicles traveling to operations areas within the proximity of the construction work zone.

c. Security.

The Contractor shall be responsible for maintaining security at all access gates used during the project and will be held liable by the Owner for any breach of security. No gate shall be left open. The Contractor shall be required to post a guard at the gate to open and close the gate for personnel and equipment. No gate shall be left open. Guard shall be responsible for ensuring that no unauthorized persons or vehicles enter the secure area. Airport owner and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates shall be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit "piggybacking" behind another person or vehicle.

The Contractor shall be required to maintain security and comply with the Airport Security Plan and the Transportation Security Administration Security Rules and Regulations throughout the duration of the project. The Contractor and the Surety shall indemnify and save harmless the Owner, Engineer and third party or political subdivision from any and all breaches of security and shall indemnify the Owner for any fines, expenses and damages which it may be obliged to pay by reason of any breach of security resulting from the Contractor's actions at any time during the prosecution of the work. Such breaches of security are subject to fines by the Transportation Security Administration of up to ten thousand dollars ($10,000) per incident.

3.6 WILDLIFE MANAGEMENT.

Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports.

a. Trash. Food scraps from construction personnel activity must be collected and disposed of at a proper facility.

b. Standing water. Water shall not be allowed to collect and pool for more than any single 24-hour period. Temporary grading may be required to promote drainage during daily operations as well as between work phases.

c. Tall grass and seeds. The use of millet seed in turfing and seeding operations shall not be permitted.

d. Poorly maintained fencing and gates. The Contractor shall maintain a constant secure perimeter to the airfield, including continuous security perimeter fencing and gates (ifapplicable).

e. Disruption of existing wildlife habitat. Not applicable to this project.

Contractor shall take immediate remedial action to remove wildlife attractants should any occurrence be noted. Contractor shall immediately report to the Engineer and Owner should any wildlife congregation be noted, and in particular if mammals enter the airport through the construction gate.

3.7 FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT.

Special care and measures shall be taken to prevent Foreign Object Debris (FOD) damage when working in an airport environment. Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. The Contractor shall be responsible for implementing an approved FOD Management Plan prior to the start of construction activities. The FOD Management Plan will have procedures for prevention, regular cleanup, and containment of construction material and debris. The Contractor will ensure all vehicles related to the construction project using paved surfaces in the AOA shall be free of any debris that could create a FOD hazard. Special attention will be given to the cleaning of cracks and pavement joints. All taxiways, aprons, and runways must remain clean. Waste containers with attached lids shall be required on construction sites.

Special attention should be given to securing lightweight construction material (concrete insulating blankets, tarps, insulation, etc.). Specific securing procedures and/or chainlink enclosures may be required.

Contractors will provide their own equipment for vehicle and equipment washing and clean up.

Immediate access to a power sweeper is required when construction occurs on any pavement area inside the AOA, unless an appropriate alternative has been approved by the Owner's Representative and Airport Operations Manager.

3.8 HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT.

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel, hydraulic fluid, or other chemical fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. To that end, the Contractor is required to develop a spill prevention plan and response procedures for vehicle operations prior to the start of construction activities. This includes maintenance of appropriate MSDS data and appropriate prevention and response equipment on-site.

Fueling Procedures and Spill Recovery Procedures shall be in accordance with Fire Code, latest edition, and the National Fire Protection Association standard procedures for spill response, latest edition. If fueling is to take place in the staging area, it must be away from catch basins. Contractor must have spill containment kits on site.

In the event of a fuel spill or the spill of other hazardous materials, the Contractor shall immediately notify the Owner and the Engineer, the New York State Department of Environmental Conservation, the Environmental Protection Agency, the Owner and the Engineer.

Contractor shall abide by the specific requirements contained in the Technical Specifications of this contract.

3.9 NOTIFICATION OF CONSTRUCTION ACTIVITY.

The following is information and procedures for immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport.

a. **Maintenance of a list of Responsible Representatives/ Point of contact.** A list of responsible representatives and points of contact shall be created by the Engineer, the Airport and the Contractor prior to the start of construction. This list shall be compiled as part of the project pre-construction

meeting agenda. Procedures will be established to contact all parties, including after regular work hours. Updates will be made to the list throughout the project duration by the Engineer. Contractor points of contact shall be incorporated into the contractor's SPCD.

b. Notices to Airman (NOTAM). Only the airport owner may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway or taxiway. The airport owner must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport owner must file and maintain a list of authorized representatives with the FSS. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport owner. See Section 3.14 regarding issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

Any NOTAMs for planned airfield closures for this project must be coordinated through the airport manager and the airports duly appointed construction management representative. Reference Section 3.2 for planned closures for this project, which require issuance of a NOTAM.

c. Emergency Notification Procedures. In the event of an aircraft emergency, severe weather conditions, or any issue as determined by the Airport that may affect aircraft operations, the Contractor's personnel and/or equipment may be required to immediately vacate the area(s) affected. Points of contact for the various parties involved with the project shall be identified and shared at the pre-construction meeting among the various parties. Emergency points of contact shall be incorporated into the contractor's SPCD.

d. Accidents. The Contractor shall provide at the site such equipment and medical facilities as are necessary to supply first aid service to anyone who may be injured in connection with the work. The Contractor must promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance for the work, whether on or adjacent to the site which caused death, personal injury or property damages, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Engineer and the Owner.

If any claim is made by anyone against the Contractor or any Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Engineer giving full details of the claims.

e. Coordination with ARFF Personnel. The contractor shall coordinate, through the duly appointed airport representative, with ARFF personnel, mutual aid providers and other emergency services if construction requires the following:

- The deactivation and subsequent reactivation of water lines or fire hydrants, or
- The re-routing, blocking and restoration of emergency access routes, or
- The use of hazardous materials on the airfield.

Procedures and methods for addressing any planned or emergency response actions on the airfield concerning this project shall be established and implemented prior to the start of construction.

f. Notification to the FAA.

i. Part 77. Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e. cranes, graders, other equipment) on airports. FAA Form 7460-1, Notice of Proposed Construction or Alteration, is used for this purpose and submitted to the appropriated FAA Airports Regional or District Office. A 7460-1 form for this project has been completed and submitted by the Airport Owner [Engineer] for using equipment with a maximum

height of x feet. A new 7460-1 form must be submitted to the FAA for review and comment for any equipment which the Contractor will use which is taller than the equipment used in the above 7460-1 submission. The [Owner] [Engineer] will be responsible for submitting the new 7460-1 form to the FAA. To that end, the Contractor shall identify the equipment in his SPCD ,including the maximum height it will extended to during construction, the area(s) in which the equipment will be used, and the duration the equipment will be used

ii. **Part 157.**With some exceptions, Title 14CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, requires that the airport owner notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA Airports Regional or District Office.

iii. **NAVAIDS.** For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

1. Airport owned/FAA maintained. If construction operations require a shutdown of more than 24 hours, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown.

2. FAA owned. The airport owner must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs. (Impacts to FAA equipment covered by a Reimbursable Agreement (RA) do not have to be reported by the airport owner). Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, through the Engineer, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. In addition, provide seven days notice to schedule the actual shutdown.

3.10 INSPECTION REQUIREMENTS.

a. Daily (or more frequent) inspections. Inspections shall be conducted by the Contractor at least daily, but more frequently if necessary, to ensure conformance with the CSPP. A sample checklist is provided in Appendix 2 of this document. In addition to Contractor's required inspections, airport operations will inspect the construction site three (3) times a day to ensure compliance with the CSPP and the SPCD. The Owner's Representative will have full-time inspectors monitoring activity throughout construction. Promptly take all actions necessary to prevent or remedy any unsafe or potentially unsafe conditions as soon as they are discovered.

b. Final inspections. A final inspection with the Owner's Representative, Airport and Contractor will take place prior to allowing airport operations.

3.11 UNDERGROUND UTILITIES.

Special attention shall be given to preventing unscheduled interruption of utility services and facilities. Where required due to construction purposes, the FAA shall locate all of their underground cables. The Contractor shall locate and/or arrange for the location of all the underground cables. When an underground cable is damaged due to the Contractor's negligence the Contractor shall immediately repair the cable affected at his/her own expense. Full coordination between airport staff, field inspectors, and construction personnel will be exercised to ensure that all airport power and control cables are fully protected prior to any excavation. Locations of cabling will be marked prior to beginning excavation.

Prior to opening an excavation, effort shall be made to determine whether underground installation: i.e., sewer, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the approximate locations of such an installation, the exact locations shall be determined by careful hand probing or hand digging, and/or use of a vacuum truck, and when it is uncovered, adequate protection shall be provided for the existing installation. All known owners of underground facilities in the area concerned shall be advised of proposed work at least 48 hours prior to the start of actual excavation.

The information concerning underground utilities was compiled from information and sketches furnished by or obtained from utility companies and the Airport. The Owner and the Engineer do not guarantee their accuracy. The Contractor is advised to determine the exact locations from the available sources of information or provide his own means of detection. The only case in which the Engineer will consider redesign or relocation of a proposed facility in the project is when an existing utility is located within the construction limits. In this case, the Engineer will work with the Airport Owner to determine the appropriate action to resolve the conflict. If such relocation is impossible, the Engineer will consider re-design or relocation of the proposed facilities. In both cases, Contractor shall be responsible for all underground utilities and shall not be separately compensated for delays or extra cost.

Note that Dig Safely New York (DSNY) services do not include locating FAA and Owner facilities.

3.12 PENALTIES.

Failure on the part of the contractor to adhere to prescribed requirements may have consequences that jeopardize the health, safety or lives of customers and employees at the airport. The Airport may issue warnings on the first offense based upon the circumstances of the incident. Individuals involved in non-compliance violations may be required to surrender their Airport ID badges and/or be prohibited from working at the airport, pending an investigation of the matter.

Penalties for violations related to airport safety and security procedures will be established by the Airport.

Note: project shutdown or misdemeanor citations may be issued on a first offense. When construction operations are suspended, activity shall not resume until all deficiencies are rectified.

3.13 SPECIAL CONDITIONS.

In the event of an aircraft emergency, the Contractor's personnel and/or equipment may be required to immediately vacate the area. The Contractor will receive notification from airport operations when special conditions require the construction site to be vacated. In any event, extreme care should be exercised should construction personnel identify any ARFF (Airport Rescue and Fire-Fighting) or other emergency or

rescue vehicle moving toward the Runway with emergency lights displayed. This will generally mean that an emergency situation is imminent.

Special conditions that could require suspension of the construction work include the following: aircraft in distress, aircraft accident, security breach, VIP operation, vehicle/pedestrian deviation, severe weather, or failing to abide by this Construction Safety and Phasing Plan and/or the Safety Plan Compliance Document.

3.14 RUNWAY AND TAXIWAY VISUAL AIDS.

This topic includes marking, lighting, signs, and visual NAVAIDs. Those areas where aircraft will be operating shall be clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, the Contractor shall inspect and verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs and visual NAVAIDs

remain in place and operational.

a. The project work area, including lay-down and staging areas and delivery gates do not encumber aircraft maneuvering surfaces. Consequently, the Contractor is not required to maintain aircraft visual aids or aircraft maneuvering surfaces.

3.15 MARKING AND SIGNS FOR ACCESS ROUTES.

Location of haul routes on the airport site shall be as specified in the project drawing set and as provided graphically in the attached exhibits, reference Appendix 1. It shall be the Contractor's responsibility to coordinate off-site haul routes with the appropriate owner who has jurisdiction over the affected route. The

haul routes, to the extent possible, shall be marked and signed in accordance with FAA airfield signage requirements, the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or state highway specifications, as applicable.

3.16 HAZARD MARKING AND LIGHTING.

a. Purpose. Hazard marking and lighting prevents pilots from entering areas closed to aircraft, and prevents construction personnel from entering areas open to aircraft. To that end, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles shall be installed and maintained by the Contractor for the duration of construction operations.

b. Equipment. Low Profile Barricades of the type detailed in the project drawings with red omnidirectional flashing lights shall be placed outside the safety area of intersecting taxiways at the edge of the closed airfield surfaces and the project work limits. Layout locations for this equipment are as shown on the Construction Safety Drawings and attached exhibits, reference Appendix 1.

Plastic Drum Type Barricades of the type detailed in the project drawings with omnidirectional flashing lights shall be placed. Layout locations for this equipment are as shown on the Construction Safety Drawings and attached exhibits, reference Appendix 1.

The Contractor shall have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The Contractor must file the contact person's information with the airport owner. Lighting should be checked for proper operation at least once per day, preferably at dusk.

3.17 PROTECTION OF AIRFIELD AREAS.

Safety area encroachments, improper ground vehicle operations and unmarked or uncovered holes and trenches in the vicinity of aircraft operation surfaces and construction areas are the three most recurring threats to safety during construction. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces shall be a standing requirement for the duration of construction operations. Contractor is responsible for establishing a perimeter barrier to prevent vehicles accessing the construction area through Construction Gate #15 (Figure 3.1 refers) from inadvertently driving on to aircraft maneuvering areas. Temporary barriers will be placed on the aircraft apron around the area of construction to prevent vehicles from inadvertently entering aircraft maneuvering area.

a. Runway Safety Area (RSA). A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway by aircraft.

Runway	Aircraft Design Group	RSA Distance from Centerline RSA	Holdline	RSA Width	RSA Length from End of Runway
15-33	B-II	75 ft.	ft.	150 ft.	300 ft.

No construction may occur within the existing RSA while the runway is open. Any construction between RSA and Holdline must be approved with Airport Operations prior to starting work.

The airport owner must coordinate any adjustment of RSA dimensions, to meet the above requirement, with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

Open trenches or excavations are not permitted within the RSA while the runway is open. The Contractor must backfill trenches before the runway is opened. Coverings are not allowed in runway safety areas. There shall be no stockpiled materials or equipment stored within the limits of the RSA.

After the Runway has been closed, Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport owner, and light them with red lights during hours of restricted visibility or darkness.

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

b. Runway Object Free Area (ROFA). Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

Runway	Aircraft Design Group	ROFA Distance from Centerline	ROFA Width	ROFA Length from End of Runway
15-33	B II	150 ft.	500 ft.	300ft.

c. Taxiway Safety Area (TSA). The taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. No construction may occur within the TSA while the taxiway is open for aircraft operations.

Taxiway	Aircraft Design Group	TSA Distance from Centerline	TSA Width
All	II	39.5 ft.	79 ft.

Open trenches or excavations are not permitted within the TSA while the taxiway is open. The Contractor must backfill trenches before the taxiway is opened. Coverings are not allowed in taxiway safety areas.

The airport owner must coordinate any adjustment of TSA dimensions, to meet the above requirement, with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

After the Taxiway has been closed, Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport owner, and light them with red lights during hours of restricted visibility or darkness.

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

d. Taxiway Object Free Area (TOFA). Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway/taxilane object free area during normal operations. Thus the restrictions are more stringent. No construction equipment may be parked within the TOFA while the taxiway/taxilane is open for aircraft operations.

Construction activity may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:

(i) Appropriate NOTAMs are issued.

(ii) Marking and lighting meeting the provisions above are implemented.

(iii) Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). In these situations, flaggers must be used to direct construction equipment, and wing walkers will be necessary to guide aircraft. Wing walkers should be airline/aviation personnel rather than construction workers. If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.

Taxiway	Aircraft Design Group	TOFA Distance from Centerline	TOFA Width
All	B-II	65.5 ft.	131 ft.

Taxilane	Aircraft Design Group	TLOFA Distance from Centerline	TLOFA Width
All	B-II	57.5 ft.	115 ft.

e. Obstacle Free Zone (OFZ). Construction personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. The OFZ is a defined volume of airspace centered about and above the runway centerline.

f. Runway approach/departure surfaces. All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport owner with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

Runway End	Aircraft Approach Category	Airplane Design Group	Minimum Safety Area Behind Threshold	Minimum Unobstructed Approach Slope

Rwy 15-33	B	II	300	50:1 to 200 feet behind threshold

3.18 OTHER LIMITATIONS ON CONSTRUCTION.

A. Prohibitions. The following prohibitions are in effect for the duration of this project:

1. No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
2. No use of open flame welding or torches unless fire safety precautions are provided and the airport owner has approved their use.
3. No use of electrical blasting caps or explosives of any kind on or within 1,000 ft (300 m) of the airport property.
4. No use of flare pots within the AOA.

B. Restrictions.

i. Construction suspension required during specific airport operations – Not Applicable
ii. Areas that cannot be worked on simultaneously – Not Applicable
iii. Day or night construction restrictions – Not Applicable

Equipment for nighttime lighting of construction areas shall be sufficient to adequately illuminate the work area in order to ensure quality construction. The lights shall be positioned to provide the most natural color illumination and contrast with a minimum of shadows. Lighting pavements from both sides is considered preferable as lighting from only one side can result in objectionable shadows. Light towers shall be positioned and adjusted to aim away from ATCT cabs, active runways, and active taxiways to prevent blinding effects. The Contractor shall prepare a plan showing the locations, heights and aiming points of light towers for review by the Owner, Engineer and ATCT personnel. The final location and aiming of light towers shall be determined by trial, therefore, the Contractor must be aware that several attempts at locations and aiming angles may be necessary before the light towers can be operational. Light towers shall be removed from the construction site prior to opening the pavement to aircraft operations.

It is recommended that all equipment, except haul trucks, be equipped with artificial illumination to safely illuminate the area immediately surrounding their location.

Unless provided for elsewhere, the cost of nighttime lighting of construction areas shall be considered a subsidiary and incidental part of construction and as such, the Contractor shall include all costs associated with nighttime lighting of construction areas in the various pay items of work involved.

Where work on this Contract is not scheduled for night work and the Contractor requests and receives permission to work at night, there will be no additional compensation allowed for the extra costs associated with night work.

iv. Seasonal Construction Restrictions – Not Applicable

APPENDIX 1 LOCATION

MAP
(Sheet G001 of the Contract Drawings)

GENERAL PLAN
(Sheets C001 of the Contract Drawings)

CONSTRUCTION SAFETY AND PHASING PLAN
(See C001 of the Contract Drawings)

CONSTRUCTION SAFETY DETAILS
(See the Contract Drawings)

APPENDIX 2

CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

Construction Project Daily Safety Inspection Checklist

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety Area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovers holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the contractor may use to aid in identifying and correcting potentially hazardous conditions.

Potentially Hazardous Conditions

Item	Action Required	or	None
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.			☐

Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		☐
Runway resurfacing projects resulting in lips exceeding 3 in (7.6 cm) from pavement edges and ends.		☐
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		☐
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		☐
Tall and especially relatively low visibility units (that is, equipment with slim profiles) –cranes, drills, and similar objects—located in critical areas, such as OFZ and approach zones.		☐
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on an apron, open taxiway, or open taxi lane or in related safety, approach, or departure area.		☐
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		☐

Item	Action Required	or	None
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.			☐

Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		☐
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		☐
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		☐
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		☐
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		☐
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		☐
		☐

Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.			
Item	Action Required	or	None

Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		☐
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		☐
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		☐
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		☐
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		☐
Site burning, which can cause possible obscuration.		☐
Construction work taking place outside of designated work areas and out of phase.		☐

APPENDIX 3

CONTRACTORS SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

(The SPCD Certification is located in the Proposal Section)

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

Project Location: _____

Project Name: _____

General Statement:

The Construction Safety and Phasing Plan (CSPP), identified as Attachment "A" to Section 80, has been prepared in accordance with FAA Advisory Circular 150/5370-2F, *Operational Safety on Airports During Construction and the requirements of the Airport Owner*. The CSPP has been submitted to the FAA for review and comment. Any comments from the FAA which were received prior to bid opening have been incorporated into the CSPP.

In the event that the FAA transmits comments which require that the CSPP be revised after bid opening, I understand that I am obligated to abide by the conditions and statements contained in the revised CSPP. I further understand that I will be given the opportunity to evaluate the revised CSPP as it relates to my contract and request appropriate compensation in accordance with the provisions of the contract.

Supplemental Information:

Where the CSPP covers a subject and no additional information is needed, the statement below reads, "No supplemental information required". Where additional information is required by the Contractor, the information shall be provided in the spaces below.

The section numbers below correspond with the section numbers in the CSPP.

3.1 Coordination

Statement: [Explain how you will distribute information and details of meetings to employees and subcontractors.]

_____
_____
_____
_____

3.2 Phasing

Statement: [List the number of days each Work Area will take. State the time day work will start and finish for each work area.]

_____
_____
_____
_____

3.3 Areas and operations affected by the construction activity

Statement: Information is provided in the CSPP. No supplemental information is required.

3.4 Protection of NAVAIDs

Statement: Information is provided in the CSPP. No supplemental information is required.

3.5 Contractor Access

Security Statement: [Explain how you will maintain integrity of the airport security fence at the

access gate, e.g.: Gate guards, closed and locked gates, temporary fencing, etc.]

Training Statement: [List individuals who will receive driver training (for certificated airports and as requested.]

Communication Statement: [Identify types of radios, if any, you will use to communicate with drivers and personnel. Identify who will be monitoring radios. Identify a contact person and phone number if ATCT cannot reach the contractor's designated person by radio.]

Escort Statement: [Identify who will escort material delivery vehicles.]

3.6 Wildlife Management

Statement: [Identify who will be monitoring wildlife in the construction area. Identify who will be monitoring wildlife at the construction gate.]

3.7 Foreign Object Debris (FOD) Management

Statement: [Identify who will be preparing a FOD Management Plan. (Plan must be approved prior to the start of construction activities.)]

3.8 Hazardous material (HAZMAT) management

Statement: [Identify who will be preparing a Spill Prevention Plan. (Plan must be approved prior to the start of construction activities.)]

3.9 Notification of construction activities. Provide the following:

Key Personnel Statement: [Identify your key personnel points of contact with phone numbers.]

Emergency Contacts Statement: [Identify your emergency contacts with 24 hour phone numbers.]

Equipment Statement: [Part 77: Identify equipment you will be using that is taller than feet, including on-site batch plants. Identify the maximum height it will be extended to during construction for each Work Area and the expected duration. Identify when during the day it will be used.]

3.10 Inspection requirements.

Statement: [Identify the person who will be responsible for daily inspections to ensure conformance with the CSPP. Describe additional inspections you will employ, if any, to ensure conformance.]

3.11 Underground utilities.

Statement: [Discuss proposed methods of identifying and protecting underground utilities.]

3.12 Penalties

Statement: Information is provided in the CSPP. No supplemental information is required.

3.13 Special conditions.

Statement: [Identify who will be responsible for moving equipment and personnel from the work area and vacating the area in the event of a special condition listed in the CSPP.]

3.14 Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.15 Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.16 Hazard marking and lighting.

Statement: [Identify who will be responsible for maintaining hazard marking and lighting. Include a 24 hour phone number.]

3.17 Protection of taxiway and runway safety areas. Include object free areas, obstacle free zones, approach/departure surfaces and safety areas as required. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:

Equipment and methods for maintaining Taxiway/Taxilane Safety Area standards.

Statement: Information is provided in the CSPP. No supplemental information is required.

Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.18 Other limitations on construction.

Other limitations are identified in the CSPP and do not require an entry in this document.

APPENDIX 4

SPOIL DEPOSITION RELEASE FORM

SPOILS DEPOSITION RELEASE FORM

To: Chautauqua County – Dunkirk Airport (OWNER), and

LaBella Associates, DPC 500 East Sixth Street, Jamestown NY 14701

(ENGINEER).

Project: New Hangar 3 Building

This SPOILS DEPOSITION RELEASE FORM is being forwarded to the above referenced OWNER and ENGINEER to satisfy the Contract Documents governing the above referenced project. Pursuant to the Contract Documents, LANDOWNER has granted permission to CONTRACTOR to deposit spoils at LANDOWNER'S property located at _____ (give specific location).

Further, CONTRACTOR hereby agrees to the greatest extent of the law, to release, indemnify, hold harmless, and defend the OWNER and ENGINEER from any and all damage, liability, or cost (including reasonable attorney's fees and cost of defense) to the extent caused by or arising out of the deposition of the spoils on LANDOWNER'S property.

CONTRACTOR:	**LANDOWNER:**
_____	_____
Signature	Signature
_____	_____
Written Name & Title	Written Name & Title
_____	_____
Company Name	Company Name
_____	_____
Mailing Address (Street Name and Number)	Mailing Address (Street Name and Number)
_____	_____
City, State, Zip Code	City, State, Zip Code
_____	_____
Daytime Phone Number (Include Area Code)	Daytime Phone Number (Include Area Code)
_____	_____
Date	Date

SECTION 01 23 00- ALTERNATES

1.01 SECTION INCLUDES

A. Description of Alternates.

B. Procedures for pricing Alternates.

1.02 RELATED REQUIREMENTS

A. Document 00 21 13 - Instructions to Bidders: Instructions for preparation of pricing for Alternates.

B. Document 00 52 00 - Agreement Form: Incorporating monetary value of accepted Alternates.

1.03 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.04 DEFINITION

A. Alternate: A cost submitted by bidders and stated on the Bid Form representing certain work as defined in the bidding documents and the following schedule. Alternates may be added to or deducted from the Base Bid amount if the Owner decides to accept a change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the alternate into the Work. No other adjustments are made to the Contract Sum.
2. Alternate prices shall include all costs associated with work including overhead, profit, labor, material, delivery, bonding and insurances.

1.05 SCHEDULE OF ALTERNATES

A. Alternate No. 01 – Wood liner panels

1. State the amount to be added to the Base Bid for all work associated with the installation of plywood panels as specified in Division 6 and indicated on the drawings.
2. Contracts: GC

B. Alternate No. 02 – Interior walls

1. State the amount to be added to the Base Bid for all work associated with the construction of interior spaces as shown on the floor plan including, Office Room 2, Storage Room 5 and Restroom 6. Work will include all fixtures, walls, doors, ceilings and finishes. All under-slab plumbing and electrical circuits required at main panel will remain in the base bid.
2. Base Bid work: Include plywood liner panel to 8’ AFF and associated framing at exterior walls where rooms were to be constructed.
3. Contracts: GC, EC, PC, HC

END OF SECTION

SECTION 061000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Non-structural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Interior Panels

E. Wood Preservative

F. Concealed wood blocking, nailers, and supports.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

B. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010b.

D. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2010.

E. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on wood preservative materials and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review.
   2. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
   3. Factory mark each piece of lumber with grading stamp of grading agency.
   4. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
   5. Provide dressed lumber, S4S, unless otherwise indicated.
   6. Maximum Moisture Content: 19 percent unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FRAMING

A. Blocking, nailers, etc. in connection with roofing or in contact with concrete:
   1. Lumber: No.2, unless otherwise indicated.
   2. Species: Southern pine, SPIB.

2.03 INTERIOR PANELS

A. Plywood: APA PRP-108, Structural I Rated Sheathing, Exposure 1, and as follows:
   1. Span Rating: 24/16.
   2. Thickness: 5/8 inch, nominal.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
      b. Hoover Treated Wood Products, Inc: www.frtw.com.
      c. Osmose, Inc: www.osmose.com.
      d. Substitutions: See Section 01600 - Product Requirements.
   2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Do not use treated wood in direct contact with the ground.

C. Preservative Treatment:
   1. Manufacturers:
      a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
      b. Viance, LLC: www.treatedwood.com.
      c. Osmose, Inc: www.osmose.com.
      d. Substitutions: See Section 01600 - Product Requirements.
   2. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
      b. Treat plywood in contact with roofing, flashing, or waterproofing.
      c. Treat plywood in contact with masonry or concrete.
      d. Treat plywood less than 18 inches above grade.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.02 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

D. Specifically, provide the following non-structural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.

3.03 INSTALLATION OF PANELS

A. Interior panels: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. Screw panels to framing; staples are not permitted.

END OF SECTION

SECTION 079200 – JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes joint sealants for the following applications:

1. Exterior joints in vertical surfaces and horizontal non-traffic surfaces.
2. Interior joints in vertical surfaces and horizontal non-traffic surfaces.
3. Interior joints in horizontal traffic surfaces.

1.2 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.3 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Compatibility and adhesion test reports.

C. Product test reports.

1.4 QUALITY ASSURANCE

A. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact or affect joint sealants to joint-sealant manufacturers for testing according to manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

1.5 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

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

B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Nonmembrane Roof Sealants: 300 g/L.
3. Single-Ply Roof Membrane Sealants: 450 g/L.
4. Sealant Primers for Nonporous Substrates: 250 g/L.
5. Sealant Primers for Porous Substrates: 775 g/L.
6. Modified Bituminous Sealant Primers: 500 g/L.

C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Single-Component Neutral- and Basic-Curing Silicone Sealant ES-1:

1. For exterior wall sealant.
2. Products:

a. Dow Corning Corporation; 790.
b. Tremco; Spectrem 1 (Basic).

3. Type and Grade: S (single component) and NS (nonsag).
4. Class: 100/50.
5. Use Related to Exposure: NT (nontraffic).
6. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
7. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.

C. Multicomponent Pourable Urethane Sealant ES-2:

1. For interior tintable horizontal traffic exposure sealant.
2. Products:

    a. Pecora Corporation; Dynatrol II-SG.
    b. Sika Corporation, Inc.; Sikaflex - 2c SL.
    c. Sonneborn, Division of ChemRex Inc.; SL 2.

3. Type and Grade: M (multicomponent) and P (pourable).
4. Class: 25.
5. Uses Related to Exposure: T (traffic) and NT (nontraffic).
6. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

D. Single-Component Nonsag Urethane Sealant ES-3:

1. For interior non-tintable joints subject to traffic.
2. Products:

    a. Sika Corporation, Inc.; Sikaflex - 1a.
    b. Sonneborn, Division of ChemRex Inc.; NP 1.
    c. Tremco; Vulkem 116.

3. Type and Grade: S (single component) and NS (nonsag).
4. Class: 25.
5. Uses Related to Exposure: T (traffic) and NT (nontraffic).
6. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.

2.4 LATEX JOINT SEALANTS

A. Latex Sealant LS-1: Comply with ASTM C 834, Type O P, Grade NF.

B. Use for exposed interior joints in vertical and horizontal non-traffic surfaces.

C. Products:
1. Pecora Corporation; AC-20+.
2. Sonneborn, Division of ChemRex Inc.; Sonolac.
3. Tremco; Tremflex 834.

2.5 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant for Exposed and Concealed Joints AS-1: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Products:

a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

B. Acoustical Sealant for Concealed Joints AS-2: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

1. Products:

a. Pecora Corporation; BA-98.
b. Tremco; Tremco Acoustical Sealant.

2.6 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant.

    a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.

2. Remove laitance and form-release agents from concrete.

    a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 079200

SECTION 08 11 13 – HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated steel doors and frames.

1.02 RELATED REQUIREMENTS

A. Door Hardware – See Drawings

B. Section 099123 - Interior Painting: Field painting.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

D. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014. (ANSI/BHMA A156.115)

E. ICC A117.1 - Accessible and Usable Buildings and Facilities; International Code Council; 2009 (ANSI).

F. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.

G. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2013.

H. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

C. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Maintain at the project site a copy of all reference standards dealing with installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Doors and Frames:
   1. Assa Abloy Ceco, Curries, or Fleming: www.assaabloydss.com.
   2. Republic Doors: www.republicdoor.com.
   3. Steelcraft, an Allegion brand: www.allegion.com/us.
   4. Substitutions: See Section 016000 - Product Requirements.

2.02 DOORS AND FRAMES

A. Requirements for All Doors and Frames:
   1. Accessibility: Comply with ICC A117.1 and ADA Standards.
   2. Door Top Closures: Flush with top of faces and edges.
   3. Door Edge Profile: Beveled on both edges.
   4. Door Texture: Smooth faces.
   5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
   6. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
   7. Galvanizing for Units in Wet Areas: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness
   8. Finish: Factory primed, for field finishing.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 STEEL DOORS

A. Interior Doors, Non-Fire-Rated:
   1. Grade: ANSI/SDI A250.8 (SDI-100); Level 2 - Heavy-Duty, Physical Performance Level B, Model 1 - Full Flush.
   2. Core: Kraftpaper honeycomb.
   3. Thickness: 1-3/4 inch.

2.04 STEEL FRAMES

A. General:
   1. Comply with the requirements of grade specified for corresponding door.
      a. Frames for Wood Doors: Comply with frame requirements in accordance with ANSI/SDI A250.8 (SDI-100), Level 2, 16 gage, 0.053 inch, minimum thickness.
   2. Finish: Factory primed, for field finishing.
   3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
   4. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.
   5. Frames Installed Back-to-Back: Reinforce with steel channels anchored to floor and overhead structure.

B. Interior Door Frames, Non-Fire-Rated: Knock down type.

2.05 ACCESSORY MATERIALS

A. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

B. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

C. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.

B. In addition, install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Coordinate installation of hardware.

E. Coordinate installation of glazing.

3.04 TOLERANCES

A. Clearances Between Door and Frame: As indicated in ANSI/SDI A250.8 (SDI-100).

B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 08 33 00- VERTICAL BI-FOLD DOORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Lift-strap bifold doors.

1.2 RELATED SECTIONS

A. Structural Metal Framing – Drawing S001

B. Section 13 34 19 – Metal Building Systems; metal wall panels, insulation and scrim.

C. Division 26; for required electrical work

1.3 REFERENCES

A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Submit manufacturer's specification sheets for each door, product data and installation instructions. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

C. Shop Drawings: Submit shop drawings for approval prior to fabrication. Include detailed plans, elevations, details of framing members, required clearance, anchors and accessories. Include relationship with adjacent materials. The model and type of door, operators and controls shall be clearly shown. Door weight, method of suspension, operation, and all fastenings shall be indicated. Provide roughing-in diagrams, Include the following:
   1. Summary of forces and loads on walls and jambs.
   2. Setting drawings, templates, and installation instructions for built-in or embedded anchor devices.
   3. Safety decal placement guide manual / warning labels.
   4. Electrical system manual for the door system.
      a. Electrical schematics.
      b. Electrical wiring diagram.
   5. Diagrams of potentially hazardous locations related to the operation of the door.
   6. Shop drawings shall be certified by a professional engineer registered in the jurisdiction where the project is located.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain doors through one source from a single manufacturer.

B. Manufacturer Qualifications: Engage a firm experienced in manufacturing doors similar to those indicated for this Project and with a record of successful in-service performance.

C. Installer Qualifications: Engage an experienced installer who is an authorized representative of the door manufacturer for both installation and maintenance of units required for this Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in manufacturer's labeled protective packages. Store and handle in strict compliance with manufacturer's written instructions and recommendations. Protect from damage from weather, excessive temperatures and constructions operations.

B. Inspect doors upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect. Otherwise, remove and replace damaged items as directed.

C. Place door frame units on minimum 4 inches (102 mm) high wood blocking. Store doors components and packages at building site under cover. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately.

D. Store the sheet, panels, components and other manufactured items so that they will not be damaged or deformed. Store metal sheets or panels so that water accumulations will drain freely. Do not store sheets or panels in contact with other materials which might cause staining.

E. Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 WARRANTY

A. Warranty: Furnish manufacturer's standard limited 2 year written warranty against defects in materials and workmanship, and against problems which arise through normal anticipated usage of the door during the warranty period. The warranty shall be signed by the manufacturer.
   1. Additional Warranty: In addition to the warranty specified above, the door manufacturer shall warrant the original lift straps for a period of five years, against defects in material.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Schweiss Doors, which is located at: 72121 470th St.; Hector, MN 55342; Toll Free Tel: 800-746-8273; Tel: 507-426-8273; Fax: 507-426-7408; Email: request info (schweiss@bifold.com); Web: www.bifold.com|www.hydraulicdoors.com

B. Products by other manufacturers may be submitted if meeting the intent of this specification.

2.2 LIFT-STRAP BIFOLD DOORS

A. General, Size:
   1. Clear Opening Width: 60’-0”.
   2. Clear Opening Height (Above Finished Floor Elevation): 20’-0”.
   3. Overall Height of Door (Clear Height plus Wedge): 24’-0”.

B. General, Door Design Criteria:
   1. The doors shall be designed to the same loading requirements for live, dead and wind loads as the building.
   2. The doors shall be engineered to resist all anticipated loads without sagging, bowing or conflicting with its smooth and efficient operation.
   3. The design shall be furnished, approved and sealed by a professional engineer registered in the jurisdiction where the Project is located.

C. General, Building Design Criteria:
   1. The building header shall be designed to accommodate horizontal and vertical building deflections to support the bifold door in all positions (with the proper lateral bracing).
   2. The building's door columns shall be framed of the proper design and size to reinforce the opening (with lateral bracing) and to carry all loads and vibrations imposed thereon.
   3. The bifold door shall have solid footing with sill directly underneath the door frame and extending outward from the door to provide a base for the door's weather seal. This also prevents flow of water into, or under, the door installation.
   4. The finished floor of the building shall be designed to prevent flow of water under the door installation. Sills shall have a slight slope outward of the bifold door to prevent water flow under the door installation.

D. General, Electrical Requirements:
   1. The Electrical Contractor shall furnish and install a prewired electrical door operating mechanism to control each bifold door.
   2. The Electrical Contractor is responsible and required to completely install the prewired electrical door operating mechanism, push button controls, devices and electrical conduit and wiring to the door operating controls.
   3. The electrical door mechanism and control shall be field wired by the Electrical Contractor. Not the door manufacturer.
   4. Control panel with up/down/off switch pre-wired to motor, and over-ride controls with the required number of adequately sized insulated electrical conductors.

E. General, Electric Power Operator:
   1. Electrical controls and devices shall conform to the requirements of the current National Electrical Code 513, NEMA, and be UL approved.
   2. Provide UL Listed Electric Operator, size and type as recommended by the manufacturer.
   3. The operator is furnished complete and consists of a motor and factory-wired control panels consisting of main fused disconnect switch, magnetic reversing starters, limit switches and push button controls, control circuit transformers, relays, and timing devices.
   4. Manufacturer's standard warning devices.

F. Bifold Door Framework Fabrication / Construction Requirements:
   1. Doors shall be of the electrically operated bifold canopy type and shall be integral with the building design.
   2. When in the open position the doors shall have a slight slope to direct drainage away from the building.
   3. Door shall be hinged horizontally at the top and center, and be arranged to open by moving frame out and up.
   4. Door frames shall have pre-located top hinges to align with the building truss members.
   5. Door shall be self-contained with only the top hinges, bottom door rollers and column followers/ wind rails.
   6. The door framework shall consist of jig welded steel tube sections engineered by the door manufacturer to resist all anticipated loads without sagging, bowing or conflicting with its smooth operation.
   7. Structural steel door framing members shall be ASTM A500 Grade B square structural welded steel tubing.
   8. All labor, materials, accessories, equipment and services necessary to furnish a complete installation of a bifold door as indicated by the manufacturer including frame, sections, brackets, guides, tracks, hardware, operators and installation instructions.
   9. Shop connections shall be welded.
   10. Field connections shall be bolted or welded as applicable.

G. Top Driveshaft / Lift Drums Mounted on Subframes:
   1. The solid steel driveshaft with lift drums mounted on its own subframe, runs continuously along entire door width, providing an even lift of the door at all times.
   2. The drive shaft shall be attached to the top subframe with (greaseable) bearing mounts wherever there is a strap drum installed, to minimize stress on the shaft.
   3. Solid driveshaft and lift drums shall be in sufficient amount to give 5:1 safety factor.
   4. Lift Straps:
      a. The door power unit shall be operated by a system of lifting straps (not cables), lifting drums, and drive shafts.
      b. Lift straps are routed from the take-up drums, through guide rollers attached to the header of the building, and attached to an adjustable retainer on the lower door truss thereby transmitting forces directly to the header of the building and relieving door of unnecessary stresses.
      c. Lift straps and lift drums shall be manufacturer's standard adequately sized to give a 5:1 safety factor.

H. Bottom Driveshaft / Lift Drums Mounted on Top Frame:
   1. The solid steel driveshaft with lift drums mounted on bottom cord of door runs continuously along entire door width providing an even lift of the door at all times.

2. The drive shaft shall be attached to the door frame with (grease-able) bearing mounts wherever there is a strap drum installed, to minimize stress on the shaft.
3. Solid driveshaft and lift drums shall be in sufficient amount to give 5:1 safety factor.
4. Lift Straps:
    a. The door power unit shall be operated by a system of lifting straps (not cables), lifting drums and drive shafts.
    b. Lift straps attached to a retainer on the upper door frame passing through a strap guide attached at the top chord of the door frame, thereby transmitting forces directly to header of building and relieving door of unnecessary stresses.
    c. The Lift straps shall have adjustable slack take-up device to keep proper tension on each lift strap.
    d. The lift drums shall be properly shielded to avoid any potential hazards to people.
    e. Lift straps and lift drums shall be manufacturer's standard adequately sized in sufficient amount to give 5:1 safety factor.

I. Heavy Duty Hinges:
    1. Heavy Duty Steel Hinges furnished complete. Each Hinge set shall be 10.50 inches (267 mm) wide, pins shall be 11/16 inch (17.5 mm) diameter minimum.

J. Door Truss:
    1. As sized by the Hangar Door manufacturer.

K. Heavy Duty Side Rollers: The bifold doors shall include 3 inches (76 mm) Heavy Duty minimum guide rollers with sealed bearings on bottom of door at jamb location.

L. Column Followers / Wind Rails:
    1. System provided by the door manufacture to hold the base of the door securely against the building when the door is in the closed position. Solid square columns secure only in the closed position = Wind Rails.

M. Wind Pins:
    1. Automatic Wind Pins: Center wind pins 1 inch (25 mm) diameter minimum - provide a sturdy installation to automatically engage/ disengage. Automatic side latches required with automatic wind pins.

N. Latching System:
    1. Automatic Latches: Provide automatic latch.

O. Paint: The door frame members and parts shall be factory primer finished with gray primer.

P. Top and Bottom Rubber Seals:
    1. Provide manufacturer's standard seal continuous at top, bottom of each door.
    2. The door shall be equipped with neoprene weather stripping at heads and jambs to prevent flow of moisture into the door installation. Sills shall have a special fabric reinforced high grade rubber astragal. The entire door perimeter shall be weather tight.

Q. Weather Seal - Kit: The sides, and center of each bifold can be sealed off with a special weather stripping. The center of the door shall have a self-sticking foam cushion seal. The entire door perimeter shall be weather tight.

R. Electric Power Operator: Electrical controls and devices shall be designed to meet National Electrical Code Section 513. Controls are pre-wired and factory tested.

S. Electric Motor / Voltage / Phase:
   1. Electric Motor / Voltage / Phase - Standard.
      a. Service: 208, 240, 480 or 575 VAC, 60 Hz three phase. 4 wire service.
      b. Three Phase motors shall be totally enclosed.
      c. The size of the motor shall be as recommended by the manufacturer.
      d. Door operator shall be pre-wired at factory complete with 24 V.A.C. control system.

T. Gear Motor:
   1. The gear motor is equipped with an electric brake, which will stop and hold door in any position of door travel.
   2. Provide high starting torque, reversible, continuous duty, class A insulated, electric motors complying with NEMA MG 1, with overload protection, sized to start, accelerate, and operate door in either direction, from any position.
   3. A magnetic starter, with 24V control unit for reliability is standard.
   4. Design operator so motor may be removed without disturbing limit switch adjustment and without affecting emergency auxiliary operator.

U. Control Stations:
   1. Two Button Constant Hold Control Station - for opening and closing the bifold door.
      a. 2-button constant contact dead man switch, prevents operator from leaving control panel while door is in motion, either up or down.
      b. When the operator takes his hand off the up /down button, the door immediately stops regardless of its opening / closing position.
      c. The motor automatically stops when the door reaches either the full open or closed position.
   2. Radio Control System:
      a. 3-channel coaxial receiver to open, close, and stop door per operator.
      b. Multifunction remote control transmitter. (Quantity of 2 per door). Important: When the operator takes his hand off the remote control transmitter, the door immediately stops regardless of its opening / closing position.

V. Limit Switches:
   1. Heavy duty limit switch box shall be weatherproof.
   2. Heavy duty limit switch box shall provide adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

W. Electrical Disconnect:
   1. Provide electrical disconnect to completely disable the door, for service, maintenance, emergency backup operations.
   2. Mount disconnect so it is accessible from floor level.

X. Additional Equipment:
   1. Top Limit Override Safety Switches:
      a. Upper override switch that disconnects power to door if upper limit fails or if limits are overridden.

b. This safety feature is designed to prevent the door from traveling beyond its recommended clear opening height. If the door passes its full clear opening height, it will activate the override and stop the door automatically.

2. Electric Photo Eye Sensors

   a. Electric Photo Eye Sensors mounted near floor level prevent or stop and reverse the door when an obstruction brakes the detection beam. If the beam is broken, door will reverse to a fully open position.--Stop and Reverse When using this system use a Top Limit Override switch to shut the motored pump off when door reaches a full open position.

3. Warning Lights And Horn:
   a. Warning Lights and Horn, which alerts persons in the area that door is opening or closing.

4. Emergency Operation - Auxiliary Backup System:
   a. Type: Manual hand-crank.
   b. The door shall be capable of being auxiliary operated in the event of a power outage.
   c. Include disconnect device to prevent motor from operating when manually operating door.
   d. Manual operation of door shall be designed to avoid damage to doors, safety edges, and electrical system.
   e. Provide safety operating instructions: Observe all safety precautions according to the manufacturer's precautions.

5. Radio Control System:
   a. 3-channel coaxial receiver to open, close, and stop door per operator.
   b. Multifunction remote control transmitter. (Quantity of 2 per door). Important: When the operator takes his hand off the remote control transmitter, the door immediately stops regardless of its opening / closing position.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Examine wall and overhead areas, including opening framing and blocking, with Installer present, for compliance with requirements for installation tolerances, clearances, and other conditions affecting performance of Work of this section.

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

3.2 LIFT STRAP BIFOLD DOOR INSTALLATION

A. General

1. Door manufacturer is required to coordinate with the metal building manufacturer in the development of the exact installation details, and provide weights and door loadings to building manufacturer.
2. Install door, track, and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports according to Shop Drawing, manufacturer's written instructions, and as specified.
3. Fasten vertical track assembly to framing at not less then 24 inches o.c. Hang horizontal track, hinges from structural overhead framing with angle or channel hangers welded and/or bolt fastened in place. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track, hinges and door-operating equipment.

B. Top and Bottom Limits Settings: Each bifold door has a recommended clear opening setting, specified by the manufacture. Do not over travel the door beyond the recommended setting.

C. Exterior Wall Panels: Metal building erector to install the same exterior wall panels that are on the building, use the same type on the bifold doors. Install the proper trims that are recommended by the manufacturer.

D. Insulation: The Metal Building erector shall supply and install batt fiberglass insulation with scrim as indicated on the Drawings

E. Application of Proper Safety Markings:
1. Apply Proper Markings for any potentially hazardous locations related to the operation of the door.
2. Follow the pictorial diagram included in the door installation manual.

F. Installing Warning Labels:
1. Furnish warning labels for any potentially hazardous locations related to the operation of the door.
2. Fasten warning labels to the bifold door frame and by the operator's station in accordance with manufacturer's instructions, no exceptions allowed.

G. Installer Certificates: Signed by manufacturer certifying that installers comply w/ specified requirements.

3.2 ELECTRICAL WORK

A. Install the prewired electrical door operating mechanism, push button controls, devices and electrical conduit and wiring to the door operating controls.

B. Install temporary electrical wiring furnished by door manufacturer to be used for the initial set-up. Coordinate with licensed electrician to ensure that temporary wiring is removed and final hookup is performed by the licensed electrician in order to be eligible for manufacturer's warranty.

3.3 ADJUST AND CLEAN

A. Lubricate, test adjust doors to operate easily, free from warp, twist, or distortion and fitting weather tight for entire perimeter.

B. Prime Coat Touch Up:
   1. Immediately after erection, sand smooth any rusted or damaged areas of prime coat.
   2. Touch-up damaged coating and finishes and repair minor damage.
   3. Clean exposed surfaces using non-abrasive materials and methods recommended by manufacturer of material or product being cleaned, and apply touch up of compatible air drying primer.

C. Factory Finish Touch Up: Touch up all scratches, abrasions or other slight painting defects with the same type and color of paint as originally applied.

D. Final Adjustments:
   1. Lubricate bearings and moving parts, adjust open and closed limits and doors to operate easily, free from warp, twist, or distortion and fitting weathertight for the entire perimeter.
   2. Check and readjust operating finish hardware items, leaving doors undamaged and in complete and proper operating condition.

3.4 DEMONSTRATION

A. Startup Services: Engage a qualified-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:
   1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
   2. Train Owner's maintenance personnel on procedures and schedules related to startup and shut down, operating, troubleshooting, servicing, and preventative maintenance.
   3. Review data in the installation and maintenance manuals.
   4. Schedule training with Owner with at least seven days advance notice.

END OF SECTION

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 092900- Gypsum Board

1.2 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
2. Suspension systems for interior gypsum ceilings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.

B. Studs and Runners: ASTM C 645. Use either steel studs and runners or dimpled steel studs and runners.

1. Steel Studs and Runners:

a. Minimum Base-Metal Thickness: 0.0329 inch.
b. Depth: As indicated on Drawings.

C. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Fire Trak Corp.; Fire Trak System
b. Grace Construction Products; FlameSafe FlowTrak System.
c. Metal-Lite, Inc.; The System.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.018 inch.

E. Cold-Rolled Channel Bridging: Steel, 0.053-inch minimum base-metal thickness, with minimum 1/2-inch- wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.018 inch.
2. Depth: As indicated on Drawings.

G. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: As indicated on Drawings.
2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum uncoated-steel thickness of 0.033 inch.
3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

H. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-metal thickness of 0.018 inch, and depth required to fit insulation thickness indicated.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

B. Hanger Attachments to Concrete:

1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.

    a. Type: Post installed, expansion anchor.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Flat Hangers: Steel sheet, 1 by 3/16 inch by length indicated.

E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch and minimum 1/2-inch- wide flanges.

1. Depth: 2-1/2 inches.

F. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
2. Steel Studs and Runners: ASTM C 645.

    a. Minimum Base-Metal Thickness: 0.043 inch.
    b. Depth: As indicated on Drawings.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), non-perforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754.
1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
2. Multilayer Application: 16 inches o.c. unless otherwise indicated.
3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

a. Install two studs at each jamb unless otherwise indicated.
b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

3.5 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.

5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

B. Related Requirements:
1. Division 09 Section "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.4 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

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

1. American Gypsum.
2. Georgia-Pacific Gypsum LLC.
3. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

C. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.
3. Moisture and Mold Resistance: ASTM D 3273, score of 10 according to ASTM D 3274.

D. High-Impact Gypsum Wall Board: ASTM C 1629/C 1629M, Level 1.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 SPECIALTY GYPSUM BOARD

A. High-Impact Gypsum Wall Board: ASTM C 1629/C 1629M, Level 1.

1. Products: Subject to compliance with requirements, provide the following:

a. National Gypsum HI-ABUSE brand XP Fire-Shield Wallboard

2. Core: 5/8 inch, Type X.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.

2. Shapes:

    a. Cornerbead.
    b. L-Bead: L-shaped; exposed long flange receives joint compound.
    c. U-Bead: J-shaped; exposed short flange does not receive joint compound.
    d. Expansion (control) joint.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.
3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
4. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.

    a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

2.7 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
b. Grabber Construction Products; Acoustical Sealant GSC.
c. Pecora Corporation; AC-20 FTR.
d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
e. USG Corporation; SHEETROCK Acoustical Sealant.

2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

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

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: As indicated on Drawings. In general provide ‘high impact’ rated and/or non-rated at all corridors below ceilings.
2. Type X: Where required for fire-resistance-rated assembly.
3. Ceiling Type: Ceiling surfaces.
4. At exterior wall locations, provide polyethylene vapor retarder with manufacturers recommended compatible joint seaming tape as specified in Division 07 Section "Thermal Insulation".

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners
2. L-Bead: Use where indicated.
3. U-Bead: Use at exposed panel edges.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
1. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

a. Primer and its application to surfaces are specified in Division 09 Section "Interior Painting."

3.6 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 095113 – ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes acoustical panels and exposed suspension systems for ceilings.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Coordination Drawings: Drawn to scale and coordinating acoustical panel ceiling installation with hanger attachment to building structure and ceiling mounted items:

C. Samples: For each exposed finish.

D. Product test reports.

E. Research/evaluation reports.

F. Maintenance data.

1.3 QUALITY ASSURANCE

A. Acoustical Testing Agency Qualifications: An independent testing laboratory or an NVLAP-accredited laboratory.

B. Fire-Test-Response Characteristics:

1. Fire-Resistance Characteristics: Where indicated, provide acoustical panel ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

    a. Identify materials with appropriate markings of applicable testing and inspecting agency.

2. Surface-Burning Characteristics: Acoustical panels complying with ASTM E 1264 for Class A materials, when tested per ASTM E 84.

    a. Smoke-Developed Index: 450 or less.

C. Seismic Standard: Comply with the following:

1. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."

1.4 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents

1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.

2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANEL CEILINGS, GENERAL

A. Acoustical Panel Standard: Comply with ASTM E 1264.

B. Metal Suspension System Standard: Comply with ASTM C 635.

C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.

1. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.

E. Seismic perimeter stabilizer bars, seismic struts, and seismic clips.

F. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

2.2 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING ACT-1

A. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:

1. USG Interior Inc.

2. Armstrong.

B. Classification: Provide fire-resistance-rated panels complying with ASTM E 1264 for type and form as follows:

1. Type and Form: Type III, wet formed high density mineral fiber; Form 2, Pattern CE.

2. Fire Class A.

C. Color: White.

D. LR: Not less than .87

E. NRC: Not less than .50, Type E-400 mounting per ASTM E 795.

F. CAC: Not less than 33.

G. Edge/Joint Detail: Square Lay In.

H. Thickness: ¾".

I. Modular Size: As shown on Drawings.

2.3 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING ACT-2

A. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:

1. Marlite.

2. Nudo.

B. Classification: Glass fiber reinforced plastic (FRP) complying with ASTM D5319
1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.

C. Color: White.

D. Edge/Joint Detail: Square Lay In.

E. Thickness: .10".

F. Modular Size: As shown on Drawings.

2.4 METAL SUSPENSION SYSTEM

A. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:

1. USG Interior, Inc.

2. Armstrong.

B. Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to

ASTM A 653/A 653M, not less than G30 (Z90) coating designation, with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges.

1. Structural Classification: Intermediate-duty system.
2. End Condition of Cross Runners: Override (stepped) type.
3. Cap Material: Steel cold-rolled sheet.
4. Cap Finish: Painted white.

PART 3 - EXECUTION

2.5 INSTALLATION

A. Comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders.

C. Suspend ceiling hangers from building's structural members, plumb and free from contact with insulation or other objects within ceiling plenum. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers, use trapezes or equivalent devices. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.

1. Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs.
2. Do not attach hangers to steel deck tabs or to steel roof deck.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.

E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

END OF SECTION 095113

SECTION 097733 - GLASS FIBER REINFORCED PLASTIC PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass fiber reinforced plastic panels.

1.02 REFERENCE STANDARDS

A. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2012.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

1.03 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

B. Samples for initial color selection

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glass Fiber Reinforced Plastic Panels:
   1. Crane Composites, Inc;: www.cranecomposites.com.
   2. Marlite: www.marlite.com.
   3. Nudo;: www.nudo.com.

2.02 PANEL SYSTEMS

A. Wall Panels:
   1. Panel Size: 4 by 9 feet.
   2. Panel Thickness: 0.10 inch.
   3. Surface Design: Embossed.
   4. Color: White.
   5. Attachment Method: Adhesive only, with trim and sealant in joints.

2.03 MATERIALS

A. Panels: Glass fiber reinforced plastic (FRP), complying with ASTM D5319.
   1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.

B. Sealant: Type recommended by panel manufacturer; white.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate flatness before starting work.

B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION - WALLS

A. Install panels in accordance with manufacturer's instructions.

B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.

C. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.

D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.

E. Install panels with manufacturer's recommended gap for panel field and corner joints.

F. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.

G. Remove excess sealant after paneling is installed and prior to curing.

END OF SECTION

SECTION 099123 – INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of interior paints and other coatings.

C. Scope: Finish all interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Exposed surfaces of steel lintels and ledge angles.
   3. Mechanical and Electrical:
      a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.
      c. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Floors, unless specifically so indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.
   1. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
   2. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2012.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.

1.04 SUBMITTALS

A. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

B. Samples: Submit two paper chip samples, 2 x 2 inch in size illustrating range of colors available for each surface finishing product scheduled.

C. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 016000 - Product Requirements, for additional provisions.
   2. Extra Paint and Coatings: 1 gallon of each color; store where directed.
   3. Label each container with color in addition to the manufacturer's label.

E. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum ten years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints:
   1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
   2. Subject to requirements, comparable products by one of the following may be submitted for review:
      a. Benjamin Moore & Co: www.benjaminmoore.com.
      b. PPG Architectural Finishes, Inc: www.ppgaf.com.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
   1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each coating material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
   1. Provide coatings that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
   3. Tints/colorants shall Add No VOC

2.03 PAINT SYSTEMS - INTERIOR

A. Ferrous Metals, Unprimed, Alkyd, 3 Coat:
   1. One coat of alkyd primer.
      a. Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6/B50WZ1: Applied at a dry film thickness of not less than 3.0 mils.
   2. Semi-gloss: Two coats of alkyd enamel; Factory-formulated semi-gloss alkyd enamel for interior application.
      a. Sherwin-Williams; Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss B53-1150 Series: Applied at a dry film thickness of not less than 1.7 mils.

B. Ferrous Metals, Primed, Alkyd, 2 Coat:
   1. Touch-up with alkyd primer.

a. Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6/B50WZ1: Applied at a dry film thickness of not less than 3.0 mils.

2. Semi-gloss: Two coats of alkyd enamel; Factory-formulated semigloss alkyd enamel for interior application, compatible with with manufacturer's primer.
   a. Sherwin-Williams; Pro Industrial Alkyd Urethane Enamel Semi-Gloss B53-1150 Series: Applied at a dry film thickness of not less than 1.7 mils.

C. Gypsum Board Latex-Acrylic, 3 Coat:
   1. One coat of latex primer sealer.
      a. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer B28W02600 Series: Applied at a dry film thickness of not less than 1.1 mils.
   2. Eggshell: Two coats of latex-acrylic enamel; Factory-formulated eggshell acrylic-latex interior enamel.
      a. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Eg-Shel Enamel B2W-12651 Series: Applied at a dry film thickness of not less than 1.6 mils.

D. Gypsum Board Ceilings and Soffits, Flat Latex, 3 Coat:
   1. One coat of latex primer sealer; Factory-formulated latex-based primer for interior application.
      a. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer B28W02600 Series: Applied at a dry film thickness of not less than 1.1 mils.
   2. Flat: Two coats of flat latex; Factory-formulated flat latex interior paint.
      a. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Flat B30W12651 Series: Applied at a dry film thickness of not less than 1.3 mils.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Plaster and Stucco: 12 percent.
   3. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
   4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing coatings that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

H. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

I. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

J. Interior Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

K. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

L. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

M. Duct work to be painted; prepare surface as required by coating manufacturer prior to application.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's instructions.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

SECTION 133419 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels.
3. Metal wall panels.
4. Thermal building insulation and scrim.
5. Rigid foundation insulation
6. Exterior personnel doors and frames.
7. Windows.
8. Accessories.

B. Related Requirements:
1. Section 08 33 00 - "Vertical Bi-Fold Doors" for bi-fold vehicular doors in metal building systems.
2. Louvers and Mechanical Equipment– See Drawing M501

1.3 DEFINITIONS

A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

1.4 COORDINATION

A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified on the Drawings.

B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at the Project site.

1. Review methods and procedures related to metal building systems including, but not limited to, the following:

    a. Condition of foundations and other preparatory work performed by other trades.
    b. Structural load limitations.
    c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
    d. Required tests, inspections, and certifications.
    e. Unfavorable weather and forecasted weather conditions and impact on construction schedule.

2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:

    a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
    b. Structural limitations of purlins and rafters during and after roofing.
    c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
    d. Temporary protection requirements for metal roof panel assembly during and after installation.
    e. Roof observation and repair after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:

    a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
    b. Structural limitations of girts and columns during and after wall panel installation.
    c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
    d. Temporary protection requirements for metal wall panel assembly during and after installation.
    e. Wall observation and repair after metal wall panel installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

    a. Metal roof panels.
    b. Metal wall panels.
    c. Thermal insulation and vapor-retarder facings.
    d. Personnel doors and frames.
    e. Windows.

B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and the following:

1. Anchor-Rod Plans: Submit anchor-rod plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor rods required to attach metal building to foundation. Indicate column reactions at each location.
2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.

3. Metal Roof and Wall Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.

    a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, and items mounted on roof curbs.
    b. Show wall-mounted items including personnel doors, vehicular doors, windows, louvers, and lighting fixtures.

4. Accessory Drawings: Include details of the following items:

    a. Flashing and trim.
    b. Snow guards

C. Samples for Initial Selection: For units with factory-applied finishes.

D. Samples for Verification: For the following products:

1. Panels: Nominal 12 inches long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
2. Flashing and Trim: Nominal 12 inches long. Include fasteners and other exposed accessories.
3. Vapor-Retarder Facings: Nominal 6-inch- square Samples.
4. Windows: Full-size, nominal 12-inch- long frame Samples showing typical profile.
5. Accessories: Nominal 12-inch- (300-mm-) long Samples for each type of accessory.

E. Door Schedule: For doors and frames. Use same designations indicated on Drawings. Include details of reinforcement.

1. Door Hardware Schedule: Include details of fabrication and assembly of door hardware. Organize schedule into door hardware sets indicating complete designations of every item required for each door or opening.
2. Keying Schedule: Detail Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

F. Delegated-Design Submittal: For metal building systems.

1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For erector, manufacturer, and land surveyor.

B. Welding certificates.

C. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.
4. Name of Contractor.
5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads.
9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
10. Building-Use Category: Indicate category of building use and its effect on load importance factors.

D. Erector Certificates: For qualified erector, from manufacturer.

E. Material Test Reports: For each of the following products:

1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shop primers.
5. Nonshrink grout.

F. Source quality-control reports.

G. Field quality-control reports.

H. Surveys: Show final elevations and locations of major members. Indicate discrepancies between actual installation and the Contract Documents. Have surveyor who performed surveys certify their accuracy.

I. Sample Warranties: For special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panel finishes and door hardware to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Accreditation: Manufacturer's facility accredited according to the International Accreditation Service's AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

D. Land Surveyor Qualifications: A professional land surveyor who practices in jurisdiction where Project is located and who is experienced in providing surveying services of the kind indicated.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect foam-plastic insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
3. Complete installation and concealment of foam-plastic materials as rapidly as possible in each area of construction.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

1.12 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the requirements of this project, provide Metal Building System by one of the following:
1. Star Building Systems
2. Ceco Building Systems
3. Varco-Pruden Buildings
4. Or approved equal.

B. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Provide a complete, integrated set of mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.

B. Primary-Frame Type:

1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.

C. End-Wall Framing: Manufacturer's standard, for buildings not required to be expandable, consisting of primary frame, capable of supporting one-half of a bay design load, and end-wall columns.

D. Secondary-Frame Type: Manufacturer's standard purlins and joists and exterior-framed (bypass) girts.

E. Eave Height: as indicated by nominal height on Drawings.

F. Bay Spacing: As indicated on Drawings.

G. Roof Slope: As indicated on Drawings.

H. Roof System: Manufacturer's standard standing-seam, vertical-rib, metal roof panels.

I. Exterior Wall System: Manufacturer's standard concealed-fastener, flush-profile, metal wall panels.

1. Liner Panels: Flush profile.

2.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal building system.

B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."

1. Design Loads: As indicated on Drawings.
2. Deflection and Drift Limits: Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design Guide No. 3 "Serviceability Design Considerations for Steel Buildings."
3. Deflection and Drift Limits: No greater than the following:

    a. Purlins and Rafters: Vertical deflection of 1/240 of the span.
    b. Girts: Horizontal deflection of 1/240 of the span.
    c. Metal Roof Panels: Vertical deflection of 1/240 of the span.
    d. Metal Wall Panels: Horizontal deflection of 1/240 of the span.
    e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
    f. Lateral Drift: Maximum of 1/500 of the building height.

C. Seismic Performance: Metal building system shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F , ambient; 180 deg F .

E. Fire-Resistance Ratings: Where assemblies are indicated to have a fire-resistance rating, provide metal panel assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 or ASTM E 108 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory," FM Global's "Approval Guide," or from the listings of another qualified testing agency.

F. Fire Propagation Characteristics: Exterior wall assemblies containing foam plastics pass NFPA 285 fire test.

G. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

H. Structural Performance for Metal Roof and Wall Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.

I. Air Infiltration for Metal Roof Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 1680 or ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft.

J. Air Infiltration for Metal Wall Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft.

K. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 or ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft.

L. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft.

M. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: **UL 60**.

N. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:

1. Three-year, aged, solar reflectance of not less than **0.55** and emissivity of not less than **0.75**.
2. Three-year, aged, Solar Reflectance Index of not less than **64** when calculated according to ASTM E 1980.

O. Thermal Performance for Opaque Elements: Provide the following maximum U-factors and minimum R-values when tested according to ASTM C 1363 or ASTM C 518:

1. Roof:
   a. R-Value: <**R 25 Batt with R 19 Liner system**>.
   b. Provide thermal spacers (1-1/2" stand-off clips)

2. Walls:
   a. R-Value: <**R 13 Batt plus R 13 continuous**>.

2.4 STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.

   a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.

2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
3. Frame Configuration: Single gable.
4. Exterior Column: Uniform depth, or Tapered.
5. Rafter: Uniform depth, or Tapered.

E. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:

1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet.
2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; or I-shaped sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.

F. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, pre-painted with coil coating, to comply with the following:

1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch- wide flanges.

    a. Depth: As indicated on Drawings.

2. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch- wide flanges.

    a. Depth: As indicated on Drawings.

3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
4. Flange Bracing: Minimum 2-by-2-by-1/8-inch structural-steel angles or 1-inch- diameter, cold-formed structural tubing to stiffen primary-frame flanges.
5. Sag Bracing: Minimum 1-by-1-by-1/8-inch structural-steel angles.
6. Base or Sill Angles: Manufacturer's standard base angle, minimum 3-by-2-inch fabricated from zinc-coated (galvanized) steel sheet.
7. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
8. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
9. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

G. Bracing: Provide adjustable wind bracing using any method as follows:

1. Rods: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50; or ASTM A 529/A 529M, Grade 50; minimum 1/2-inch- diameter steel; threaded full length or threaded a minimum of 6 inches at each end.
2. Angles: Fabricated from structural-steel shapes to match primary framing, of size required to withstand design loads.

H. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation.

I. Materials:

1. W-Shapes: ASTM A 992/A 992M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
3. Plate and Bar: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
4. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
5. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.
6. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55, or High-Strength Low-Alloy Steel (HSLAS) or High-Strength Low-Alloy Steel with Improved Formability (HSLAS-F), Grades 45 through 70; or cold-rolled, ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80, or HSLAS, Grades 45 through 70.
7. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, SS, Grades 33 through 80, or HSLAS or HSLAS-F, Grades 50 through 80; with G60 coating designation; mill phosphatized.
8. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

    a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, SS, Grades 33 through 80 , or HSLAS or HSLAS-F, Grades 50 through 80 ; with G90 coating designation.
    b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, SS, Grade 50 or 80; with Class AZ50 coating.
9. Non-High-Strength Bolts, Nuts, and Washers: ASTM A 307, Grade A, carbon-steel, hex-head bolts; ASTM A 563 carbon-steel hex nuts; and ASTM F 844 plain (flat) steel washers.

    a. Finish: Hot-dip zinc coating, ASTM F 2329, Class C orMechanically deposited zinc coating, ASTM B 695, Class 50.

10. High-Strength Bolts, Nuts, and Washers: ASTM F 3125/F 3125M,Grade A325 , Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436/F 436M, Type 1, hardened carbon-steel washers.

    a. Finish: Hot-dip zinc coating, ASTM F 2329, Class C or Mechanically deposited zinc coating, ASTM B 695, Class 50.

11. High-Strength Bolts, Nuts, and Washers: ASTM F 3125/F 3125M, Grade A490 , Type 1, heavy-hex steel structural bolts or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436/F 436M, Type 1, hardened carbon-steel washers; all with plain finish.
12. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 3125/F 3125M, Grade F1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with

splined ends; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436/F 436M, Type 1 hardened carbon-steel washers.

a. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50 or mechanically deposited zinc coating, ASTM B 695, Class 50, baked-epoxy coated.

13. Unheaded Anchor Rods: ASTM F 1554, Grade 36, Grade 50 .

a. Configuration: Straight.
b. Nuts: ASTM A 563 heavy-hex carbon steel.
c. Plate Washers: ASTM A 36/A 36M carbon steel.
d. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
e. Finish: Hot-dip zinc coating, ASTM F 2329, Class C or Mechanically deposited zinc coating, ASTM B 695, Class 50.

14. Headed Anchor Rods: ASTM F 1554, Grade 36.

a. Configuration: Straight.
b. Nuts: ASTM A 563 heavy-hex carbon steel.
c. Plate Washers: ASTM A 36/A 36M carbon steel.
d. Washers: ASTM F 436 hardened carbon steel.
e. Finish: Hot-dip zinc coating, ASTM F 2329, Class C, orMechanically deposited zinc coating, ASTM B 695, Class 50.

15. Threaded Rods: ASTM A 193/A 193M, [ASTM A 572/A 572M, Grade 50,ASTM A 36/A 36M, orASTM A 307, Grade A.

a. Nuts: ASTM A 563 heavy-hex carbon steel.
b. Washers: ASTM F 436 hardened, ASTM A 36carbon steel.
c. Finish: Hot-dip zinc coating, ASTM F 2329, Class C, or Mechanically deposited zinc coating, ASTM B 695, Class 50.

J. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

1. Clean and prepare in accordance with SSPC-SP2.
2. Coat with manufacturer's standard primer. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil.

a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.

2.5 METAL ROOF PANELS

A. Standing-Seam, Vertical-Rib, Metal Roof Panels >: Formed with vertical ribs at panel edges and **intermediate stiffening ribs symmetrically spaced** [] between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, [**0.024-inch (0.61-mm)**] nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

    a. Exterior Finish: **Siliconized polyester**.
    b. Color: **As selected by Architect from manufacturer's full range**

2. Clips: **One-piece fixed** to accommodate thermal movement.
3. Joint Type: **Mechanically seamed**.
4. Panel Coverage: [**16 inches (406 mm)**.
5. Panel Height: [**2 inches (51 mm)**.

B. Finishes:

1. Exposed Coil-Coated Finish:

    a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.6 METAL WALL PANELS

A. Exposed-Fastener, Tapered-Rib, Metal Wall Panels : Formed with raised, trapezoidal major ribs and **intermediate stiffening ribs symmetrically spaced**] between major ribs; designed to be installed by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, [**0.026**] nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

    a. Exterior Finish: **Siliconized polyester**.
    b. Color: **As selected by Architect from manufacturer's full range**

2. Major-Rib Spacing: **12 inches (305 mm)** o.c.
3. Panel Coverage: [**36 inches (914 mm)**.
4. Panel Height:**1.25 inches (32 mm)**

B. Finishes:

1. Exposed Coil-Coated Finish:
    a. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a minimum dry film thickness of 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.7 THERMAL INSULATION

A. <Double click here to find, evaluate, and insert list of manufacturers and products.>

B. Unfaced Metal Building Insulation: ASTM C 991, Type I, or NAIMA 202, glass-fiber-blanket insulation; 0.5-lb/cu. ft. (8-kg/cu. m) density; 2-inch- (51-mm-) wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.

C. Mineral-Fiber-Blanket Insulation: ASTM C 665, type indicated below; consisting of fibers manufactured from glass, slag wool, or rock wool.

1. Nonreflective Faced: Type II (blankets with nonreflective membrane covering), Category 1 (membrane is a vapor retarder), Class A (membrane-faced surface with a flame-spread index of 25 or less).

D. Retainer Strips: For securing insulation between supports, 0.025-inch (0.64-mm) nominal-thickness, formed, metallic-coated steel or PVC retainer clips colored to match insulation facing.

E. Vapor-Retarder Facing: ASTM C 1136, with permeance not greater than 0.02 perm (1.15 ng/Pa x s x sq. m) when tested according to ASTM E 96/E 96M, Desiccant Method.
1. Composition: White polypropylene film facing and fiberglass-polyester-blend fabric backing.

F. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.8 PERSONNEL DOORS AND FRAMES

A. Swinging Personnel Doors and Frames: Metal building system manufacturer's standard doors and frames; prepared and reinforced at strike and at hinges to receive factory- and field-applied hardware according to BHMA A156 Series.

1. Steel Doors: 1-3/4 inches (44.5 mm) thick; fabricated from metallic-coated steel face sheets, 0.036-inch (0.91-mm) nominal uncoated steel thickness, of **seamed** hollow-metal construction; with 0.060-inch (1.52-mm) nominal uncoated steel thickness, inverted metallic-coated steel channels welded to face sheets at top and bottom of door.

a. Design: **Flush panel**>.
b. Core: Polyurethane foam at exterior doors with U-factor rating of at least 0.07 Btu/sq. ft. x h x deg F (0.40 W/sq. m x K).

2. Steel Frames: Fabricate 2-inch- (51-mm-) wide face frames from zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.060-inch (1.52-mm) nominal uncoated steel thickness.

a. Type: **Knocked down for field assembly**

3. Fabricate concealed stiffeners, reinforcement, edge channels, and moldings from either cold- or hot-rolled steel sheet.
4. Hardware:

a. Provide hardware for each door leaf, as follows:

1) Hinges: BHMA A156.1. Three] **antifriction**-bearing, standard-weight, full-mortise, stainless-steel, template-type hinges; 4-1/2 by 4-1/2 inches (114 by 114 mm), with nonremovable pin.
2) Lockset: BHMA A156.2. **Mortise, with lever handle** type.

3) Threshold: BHMA A156.21. Extruded aluminum.
4) Silencers: Pneumatic rubber; three silencers on strike jambs of single door frames and two silencers on heads of double door frames.
5) Closer: BHMA A156.4. Surface-applied, standard-duty hydraulic type.
6) Weather Stripping: Vinyl applied to head and jambs, with vinyl sweep at sill.

5. Anchors and Accessories: Manufacturer's standard units, galvanized according to ASTM A 123/A 123M.
6. Fabrication: Fabricate doors and frames to be rigid; neat in appearance; and free from defects, warp, or buckle. Provide continuous welds on exposed joints; grind, dress, and make welds smooth, flush, and invisible.

B. Materials:

1. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.

C. Finishes for Personnel Doors and Frames:

1. Prime Finish: Factory-apply manufacturer's standard primer immediately after cleaning and pretreating.

a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.9 WINDOWS

A. Aluminum Windows: Metal building system manufacturer's standard, with self-flashing mounting fins, and as follows:

1. Type, Performance Class, and Performance Grade: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 and as follows:

a. Horizontal-Sliding Units: **HS-CW30**

2. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 0.064-inch (1.63-mm) thickness at any location for main frame and sash members.

    a. Thermally Improved Construction: Fabricate window units with an integral, concealed, low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.

3. Mullions: Between adjacent windows, fabricated of extruded aluminum matching finish of window units.
4. Fasteners, Anchors, and Clips: Nonmagnetic stainless steel, aluminum, or other noncorrosive material, compatible with aluminum window members, trim, hardware, anchors, and other components of window units. Fasteners shall not be exposed, except for attaching hardware.

    a. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.128 inch (3.26 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard, noncorrosive, pressed-in, spline grommet nuts.

5. Hardware: Manufacturer's standard; of aluminum, stainless steel, die-cast steel, malleable iron, or bronze; including the following:
    a. Spring-loaded, snap-type lock at jambs.
    b. Nylon sash rollers for horizontal-sliding units.
    c. Steel or bronze operating arms.

6. Sliding-Type Weather Stripping: Woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric; complying with AAMA 701/702.
7. Insect Screens: Provide removable insect screen on each operable exterior sash, with screen frame finished to match window unit, and as follows:
    a. Fabric: Manufacturer's standard aluminum wire fabric or glass-fiber mesh fabric.

B. Glazing: Comply with requirements specified in Section 088000 "Glazing."

C. Glazing:
1. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of 2.5-mm-thick clear float glass separated by a dehydrated interspace, qualified according to ASTM E 2190.

2. Glazing Stops: Screw-applied or snap-on glazing stops coordinated with Section 088000 "Glazing" and with glazing system indicated. Match material and finish of window frames.
3. Factory-Glazed Fabrication: Glaze window units in the factory to greatest extent possible and practical for applications indicated.

D. Finish:
1. Baked-Enamel Finish, Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 0.7 mil (0.02 mm), medium gloss.

a. Color: **As selected by Architect from manufacturer's full range** < >.

2.10 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
2. Clips: Manufacturer's standard, formed from **steel** sheet, designed to withstand negative-load requirements.
3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from **steel** sheet.
4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-1/2-inch (25-mm) standoff; fabricated from extruded polystyrene.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.

1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
2. Opening Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, [**0.018-inch (0.46-mm)**] [**0.030-inch (0.76-mm)**] nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

3. Mounting Straps: Fabricated from same material and finish as gutters.

4. Continuous or Sectional-Ridge Type: Factory-engineered and -fabricated, continuous unit; Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match metal roof panels. Fabricated in minimum 10-foot- (3-m-) long sections. Provide throat size and total length indicated, complete with side baffles, ventilator assembly, end caps, splice plates, and reinforcing diaphragms.

    a. Bird Screening: Galvanized steel, 1/2-inch- (13-mm-) square mesh, 0.041-inch (1.04-mm) wire; or aluminum, 1/2-inch- (13-mm-) square mesh, 0.063-inch (1.6-mm) wire.
    b. Dampers: Manually operated, spring-loaded, vertically rising type; chain and worm gear operator; with pull chain of length required to reach within 36 inches (914 mm) of floor.
    c. Throat Size: **9 inches (229 mm) or 12 inches (305 mm), as standard with manufacturer, and as required to comply with ventilation requirements**.

E. Roof Curbs: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.048-inch (1.21-mm) nominal uncoated steel thickness prepainted with coil coating; finished to match metal roof panels; with welded top box and bottom skirt, and integral full-length cricket; capable of withstanding loads of size and height indicated.

1. Curb Subframing: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.060-inch (1.52-mm) nominal uncoated steel thickness, angle-, C-, or Z-shaped metallic-coated steel sheet.
2. Insulation: 1-inch- (25-mm-) thick, rigid type.

F. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

G. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.

    a. Fasteners for Metal Roof Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM sealing washer.
    b. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.

c. Fasteners for Metal Wall Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws**, with EPDM sealing washers bearing on weather side of metal panels**.
d. Fasteners for Metal Wall Panels: Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head**, with EPDM sealing washers bearing on weather side of metal panels**.
e. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
f. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
4. Metal Panel Sealants:

a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
b. Joint Sealant: ASTM C 920; one part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.11 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

1. Make shop connections by welding or by using high-strength bolts.
2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.

5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.12 SOURCE QUALITY CONTROL

A. Special Inspection: Owner will engage a qualified special inspector to perform source quality control inspections and to submit reports.

1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.

a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.

1. Engage land surveyor to perform surveying.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.

a. Joint Type: Snug tightened or pretensioned as required by manufacturer.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

J. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.

1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.

D. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.

3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over structural supports with end laps in alignment.
6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

E. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.

1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

F. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge[**and hip** caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.

1. Install clips to supports with self-drilling or self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.

5. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.
6. Provide metal closures at **peaks**, **rake edges**, **rake walls and** each side of ridge **and hip** caps.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

D. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches (102 mm) minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
7. Install screw fasteners in predrilled holes.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

3.7 THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.

1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.

2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.
4. Install blankets straight and true in one-piece lengths. Install vapor retarder over insulation, with both sets of facing tabs sealed, to provide a complete vapor retarder.

B. Blanket Roof Insulation: Comply with the following installation method:

1. Over-Framing Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal roof panels fastened to secondary framing.
2. Between-Purlin Installation: Extend insulation and vapor retarder between purlins. Carry vapor-retarder-facing tabs up and over purlin, overlapping adjoining facing of next insulation course and maintaining continuity of retarder. Hold in place with bands and crossbands below insulation.
3. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Install layer of filler insulation over first layer to fill space formed by metal roof panel standoffs. Hold in place by panels fastened to standoffs.

    a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

4. Two-Layers-between-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder between purlins. Carry vapor-retarder-facing tabs up and over purlin, overlapping adjoining facing of next insulation course and maintaining continuity of retarder. Install layer of filler insulation over first layer to fill space between purlins formed by thermal spacer blocks. Hold in place with bands and crossbands below insulation.

    a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

5. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

C. Blanket Wall Insulation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal wall panels fastened to secondary framing.

1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.
2. Sound-Absorption Insulation: Where sound-absorption requirement is indicated for metal liner panels, cover insulation with polyethylene film and provide inserts of wire mesh to form acoustical spacer grid.

D. Board Wall Insulation: Extend board insulation in thickness indicated to cover entire wall. Hold in place by metal wall panels fastened to secondary framing. Comply with manufacturers' written instructions.

1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.8 DOOR AND FRAME INSTALLATION

A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturers' written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.

B. Personnel Doors and Frames: Install doors and frames according to NAAMM-HMMA 840. Fit non-fire-rated doors accurately in their respective frames, with the following clearances:

1. Between Doors and Frames at Jambs and Head: 1/8 inch (3 mm).
2. Between Edges of Pairs of Doors: 1/8 inch (3 mm).
3. At Door Sills with Threshold: 3/8 inch (9.5 mm).
4. At Door Sills without Threshold: 3/4 inch (19.1 mm).
5. At fire-rated openings, install frames according to, and doors with clearances specified in, NFPA 80.

C. Sliding Service Doors: Bolt support angles to opening head members through factory-punched holes. Bolt door tracks to support angles at maximum 24 inches (610 mm) o.c. Set doors and operating equipment with necessary hardware, jamb and head mold stops, continuous hood flashing, anchors, inserts, hangers, and equipment supports.

D. Field Glazing: Comply with installation requirements in Section 088000 "Glazing."

E. Door Hardware:

1. Install surface-mounted items after finishes have been completed at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
4. Set thresholds for exterior doors in full bed of sealant complying with requirements for concealed mastics specified in Section 079200 "Joint Sealants."

3.9 WINDOW INSTALLATION

A. General: Install windows plumb, rigid, properly aligned, without warp or rack of frames or sash, and securely fasten in place according to manufacturer's written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each window frame with elastomeric sealant used for metal wall panels.

1. Separate dissimilar materials from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in AAMA/WDMA/CSA 101/I.S.2/A440.

B. Set sill members in bed of sealant or with gaskets, for weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Mount screens directly to frames with tapped screw clips.

3.10 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

C. Roof Curbs: Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.

D. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.11 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform field quality control special inspections and to submit reports.

B. Product will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.12 ADJUSTING

A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.

B. Door Hardware: Adjust and check each operating item of door hardware and each door to ensure proper operation and function of every unit. Replace units that cannot be adjusted to operate as intended.

C. Windows: Adjust operating sashes and ventilators, screens, hardware, and accessories for a tight fit at contact points and at weather stripping to ensure smooth operation and weathertight closure. Lubricate hardware and moving parts

3.13 CLEANING AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing**, bearing plates,** and accessories.

1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

D. Touchup Painting: Cleaning and touchup painting are specified in Section 099123 "Interior Painting."

E. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

F. Doors and Frames: Immediately after installation, sand rusted or damaged areas of prime coat until smooth and apply touchup of compatible air-drying primer.

1. Immediately before final inspection, remove protective wrappings from doors and frames.

G. Windows: Clean metal surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances. Clean factory-glazed glass immediately after installing windows.

END OF SECTION 133419

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Section 01 12 01 – Construction Safety and Phasing Plan – for procedures related to working on active flight lines at FAA regulated facilities.

1.2 SUMMARY

A. Section Includes:
1. It is the intent of this section to limit the area of clearing and grubbing to the minimum area possible to allow for the proper installation of the work and to preserve all plantings, trees, shrubs, grass, and natural vegetation to the maximum extent possible.
2. Provide stripping and stockpiling of topsoil.
3. Prune existing trees and plants affected by the execution of the work.
4. Provide clearing and grubbing of all trees, plants, undergrowth, shrubs, brush, other vegetation and debris within the limits indicated on the Contract Drawings and as required to complete the work.
5. Protect existing trees and plants scheduled to remain.
6. Remove all fence, sidewalk, granite curb, concrete curb, asphalt pavement, concrete pavement, utility structures, pipes, conduits, site lighting, utility poles and other items as indicated on the Contract Drawings or as needed to complete the work.
7. Disconnect, cap or seal, and remove and/or abandon site utilities in place. Provide bypassing of flows as needed to complete and protect the work.
8. Properly dispose of all removed materials not designated to be reused or delivered to the Owner.
9. Fill and properly compact voids left from clearing and grubbing and buried utility removal activities with backfill materials to meet the finished treatments. (Refer to Part 3 “Clearing and Grubbing)

B. Related Sections:
1. Division 31 Section **“Earth Moving”**

1.3 DEFINITIONS

A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, materials toxic to plant growth, or other nonsoil materials. These soils typically need to be screened and amended before satisfying the requirements of topsoil for landscaping purposes.

D. Plant-Protection Zone: Area surrounding planting beds, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.

F. Caliper: Diameter of a trunk measured by a diameter tape at 6 inches (150 mm) above the ground for trees up to, and including, 4-inch (100-mm) size; and 12 inches (300 mm) above the ground for trees larger than 4-inch (100-mm) size.

G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

A. Submit name and qualifications of certified Arborist and tree service firm to be utilized.

B. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction. Data shall include:

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

D. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

E. Existing Conditions: Documentation of existing trees and plantings, indicated to remain and adjoining construction and/or site improvements which establishes preconstruction conditions that might be misconstrued as damage caused by site clearing or other construction related activities.

1. Use sufficiently detailed photographs or videotape.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

F. Label or pruning paint data proposed for use.

G. Antirust coating data proposed for use.

H. Contractor's schedule indicating dates upon which Contractor and Owner's Designated Representative will traverse the site to allow Contractor to indicate the trees and plantings which he has determined to be necessary to remove, trimmed, or replanted and to obtain Owner's Designated Representative's approval.

I. Detailed plan on handling of bypass flows during construction including equipment and methods proposed, timeline, crews and contingency plan. This plan will be reviewed by the Architect/Engineer and no bypass operations will be permitted without an approved plan.

J. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

A. No trees, plants, shrubs, flowers or vegetation shall be removed or trimmed without prior permission of the Architect/Engineer or Owner's Designated Representative, except where otherwise specified or directed.

B. Pruning of trees shall be completed by a trained arborist.

C. Provide at least one person who shall be present at all times during clearing and grubbing operations who shall be thoroughly familiar with the following:

1. The types of trees and plantings encountered.
2. The proper procedures and methods for preserving trees.
3. The proper procedures and methods for felling, trimming, pruning, and caring for trees and plants and their roots.

Such person(s), firm(s), or subcontractor(s) must be totally familiar with this type of work, must be regularly engaged in similar work and shall be responsible for directing all work affecting trees, plantings, and vegetation.

D. Comply with all applicable local, state, and federal requirements regarding materials, methods of work, and disposal of excess and waste materials.

E. Obtain and pay for all required inspections, permits, and fees. Provide notices required by governmental authorities.

1.7 PROJECT CONDITIONS

A. Burning or burial of materials at the site is not permitted.

B. Explosives are not permitted for clearing and grubbing operations.

C. Minimize interference with adjoining roads, streets, walks, parking areas and other adjacent occupied or used facilities during site-clearing operations. Refer to Division 32 Section "Maintenance and Protection of Traffic" for traffic maintenance information.

D. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property, if any will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Owner's Designated Representative.

E. No grubbing shall be allowed along the side slopes of the embankments.

F. All clearing and grubbing within 5-feet of the embankments shall be performed by pulling debris, sediment or any other materials away from the embankment slope to help protect the downhill areas. No materials within this area shall be pushed down the embankment slope.

G. Notify Dig Safely New York (UFPO) prior to commencing any excavation. Locate and identify existing underground and overhead services and utilities within contract limit work areas. Provide adequate means of protection of utilities and services, which are not designated to be removed. Repair utilities damaged during site work operations at Contractor's expense.

H. The Project Site Owner is not a member of Dig Safely New York. The Contractor alone shall be responsible to locate all utilities and services outside the public rights-of-way. The Contractor shall complete test pits as needed to confirm underground utilities and services. The cost of all test pits shall be included in the price bid. Provide adequate means of protection of utilities and services, which are not designated to be removed. Repair utilities damaged during site work operations at Contractor's expense.

I. Arrange for disconnection, disconnect, and seal or cap all utilities and services designated to be removed before start of site work operations. Perform all work in accordance with the requirements of the applicable utility company or agency involved. The Contractor shall pay all costs for all utility related work including coordination with and charges from the utility company for work they may require in order to accomplish the work shown or implied.

J. Should uncharted or incorrectly charted underground piping or other utilities and services be encountered during site work operations, notify the applicable utility company or utility owner immediately to obtain utility company/owner in maintaining active services in operation. The Contractor shall bear the cost of any and all repair work.

K. Locate, protect, and maintain benchmarks, monuments, control points, and project engineering reference points. Reestablish disturbed or destroyed items at Contractor's expense.

L. The control of dust, noise, erosion, and sediment originating from construction operations is considered a critical responsibility of the Contractor. The Owner's Designated Representative will be the final judge of the adequacy of the Contractor's dust, noise, erosion, and sedimentation control. Work may be suspended by the Owner's Designated Representative until adequate dust, noise, erosion, and sedimentation control is attained.

M. Protect existing buildings, paving, and other services or facilities on site and adjacent to the site from damage caused by site work operations. Cost of repair and restoration of damaged items at Contractor's expense.

N. The location and size of trees, plantings, vegetation, as well as location, size and material of construction of drives, sidewalks, curbs, fences, existing utilities and other living and non-living items, as shown on the Drawings, have been determined by actual surveys at the time surveys were made. Since that time, additional items may have been built, modified, improved or planted, some items may have been removed or replaced, and the condition of things may have changed.

O. The contract cost shall also include restoration of all disturbed or damaged areas with in-kind materials at the time of construction, whether shown on the Contract Drawings or not, unless otherwise indicated in the Contract Documents.

P. Protect and maintain streetlights, parking and sidewalk lighting, emergency phones, utility poles and services, curb boxes, valves, utility structure/piping castings, and other services, except items designated for removal.

Q. The Contractor shall take precautions to protect from harm the work of other contractors on site, existing facilities, as well as adjacent property. The Contractor shall be responsible for all damage or injury done to pipes, structures, pavement, site amenities, utility features, property or person as a result of work performed to complete this contract. The Contractor at his own expense shall repair or replace such property or item to the satisfaction of the property owner, utility owner, public agency having jurisdiction and/or Architect/Engineer and Owner's Designated Representative.

R. When it is necessary to haul materials over public or private streets, roads, drives, parking areas, walkways or other pavements, the Contractor shall provide suitable tight vehicles so as to prevent deposits on these pavements. In all cases, where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as directed and keep the crosswalks, streets, roads, drives, parking areas, walkways, and drainage ways (e.g. swales, ditches, gutters, catch basins, manholes, piping, etc.) clean and free from dirt, mud, stone, and other hauled materials.

S. Responsibility for cleaning private and public; roads, drives, parking areas or walkways, of any material carried onto these roads or other pavements by trucks or other equipment, completing work in support of this project, shall be the Contractor's and cost shall be included in price bid.

T. The following practices are prohibited within tree- and plant-protection zones:

1. Storage or stockpiling of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging, unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
8. Do not direct vehicle or equipment exhaust towards protection zones.
9. Prohibit heat sources, flames, and ignition sources within or near protection zones.
10. Do not store materials potentially harmful to tree roots. Potentially harmful materials include, but are not limited to: petroleum products; cement; lime; paints; detergents; acids; and, cleaning agents.

U. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

1.8 STORAGE AND HANDLING

A. Stockpiling of earth spoil or excess earth material on the site or storage of excavated materials for reuse shall be done in a manner which will not hinder the progress of the work; cause any nuisance; or cause spillage or tracking of materials from the transporting vehicle onto public or private roadways and pavements, or cause an inconvenience to adjacent property owners or the active campus facility.

B. Obstruction of roads, driveways, parking areas, sidewalks, or interference with drainage along curbs, ditches, or drainage channels with stored material is not permitted.

C. Store fences, signs, granite curb and other items at approved locations for subsequent reinstallation.

D. Promptly remove materials not specified to be stored or reused.

1.9 SCHEDULING

A. Avoid interference with the use of, and passage to and from, adjacent properties, buildings, facilities, driveways, walks, drainage systems, and roads etc.

B. Do not commence site clearing operations until temporary erosion- and sedimentation-control and tree- and plant-protection measures are in place.

C. Pavements which are required to be removed, including streets, roadways, driveways, parking areas, and walkways, may be saw cut in advance, but do not remove until the work is ready to be installed.

D. Do not remove signs, guide rails, and all other control, safety and warning devices until just prior to the installation of the work.

E. Do not remove fences until the property owners affected are notified at least four days in advance of such removal. Unless written permission from a fence owner is received, do not remove a fence more than 48 hours in advance of the installation of the work affected by the fence.

F. It is the intent of this section that all items affecting traffic, safety, lives, and the containment of humans and animals and all items essential to the protection of property or the operation of a business be left in place as long as possible and replaced as soon as possible when such items must be removed.

1.10 PROTECTION AND COORDINATION

A. Persons and Property:

1. Carefully protect and guard all trees, shrubs, and vegetation to remain.
2. Take every precaution to avoid damage to utilities, buildings, structures, facilities, and other property. All curbs, gutters, pavements, structures, utility lines, and other features

along the street rights-of-way, adjacent property and the existing campus facility shall be protected.

3. Barricades/Enclosures: Properly protect persons and property at all times against harm or damage of any kind during construction and site improvement operations. Provide substantial barricades/enclosures around all openings as soon as they are uncovered, to block access and afford protection to workmen, facility employees, and the general public.
4. Signals: Provide lanterns or other signalization, as may be required by law or directed by the Owner's Designated Representative in the vicinity of any open excavations or unsafe areas, and be certain that such devices are operable at all times during hours of darkness, or when the work area is left unattended.
5. Shoring/Bracing: Provide necessary shoring and bracing for support of buildings scheduled for demolition and for protection of adjacent structures and facilities caused by demolition operations. Cost of repair shall be paid by the Contractor and at no additional cost to the Owner.
6. Maintain all barricades and signals for the duration of the Contract.

B. Utilities:

1. Preserve Active Lines: Preserve in operating condition, all active utilities indicated on the Contract Drawings to remain. This applies to all utilities, which traverse the project site, or exist in the immediate vicinity of the site, including, but not limited to, mains, conduits, manholes, handholes, catch basins, valve boxes, poles, guy anchors, and appurtenances. Damage to any utility line or related appurtenances resulting from work under this Contract shall be repaired or replaced by the Contractor to the satisfaction of the Architect/Engineer, Owner, utility company, utility owner and/or local authority. All costs associated with this repair shall be paid by the Contractor at no additional cost to the Owner.
2. Damaged Utility Lines: If active utility lines are broken or damaged during any site improvements operations, take all necessary steps immediately to avoid endangering persons or property, and notify the Owner's Designated Representative, Architect/Engineer, and the affected utility company, and municipal engineer's office to obtain a decision regarding this treatment and/or assistance in the repair of the damaged line.
3. Prior Notification: Notify all utility companies, utility owners, municipal engineer's office, and/or the respective water and sewer department, prior to the commencement of any operations on the site. Confirm locations with all utility companies/owners involved, of all live or active lines within, or immediately adjacent to, the contract limit lines of this project.
4. Water Damage: In the event that water, storm sewer, sanitary, or other utility lines are broken, or that springs, ground water, or other sources of water are encountered, take all necessary steps immediately to divert water away from construction, site improvement operations and storage areas to prevent erosion, undermining or other damage. If permanent corrective measures other than those indicated on the Contract Drawings become necessary, request a written decision from the Architect/Engineer.

C. Adjacent Properties:

1. Protection: Protect all adjacent properties and structures and use every means possible to prevent erosion, flooding, undermining excessive excavation or other damage during any construction or site improvement operations. Repair all damage in a manner specified by, and to the satisfaction of the Owner's Designated Representative and the

Architect/Engineer. The Contractor shall pay the cost of any repairs necessary at no additional cost to the Owner.

D. Restoration:

1. Injured or damaged trees shall be repaired in accordance with accepted nursery industry standards and as acceptable to the Architect/Engineer.
2. Contractor shall bear the cost of repair and replacement of trees scheduled to remain that are damaged or removed by construction operations.
3. All trees, shrubs or plantings, which are taken-up for subsequent reuse, and die, shall be replaced with first class balled and burlapped nursery grown representatives of the same species and caliper at the expense of the Contractor.
4. Damage to existing curbs, gutters, pavements, structures, utility lines, or other features should be replaced or repaired to the satisfaction of the Architect/Engineer, Owner's Designated Representative, and/or utility owner, at no additional cost to the Owner.
5. Fill, grade, and compact disturbed areas to the grades and lines as shown on the Contract Drawings. Grade compacted surface to meet adjacent grades and provide proper surface drainage. Provide uniform levels and slopes. All work shall be completed in accordance with specification Division 31 Section "Earth Moving".

PART 2 - PRODUCTS

2.1 MATERIALS

A. Asphalt base paint specially formulated for horticultural application to cut or damaged plant tissue.

B. Satisfactory Soil and Granular Material: Requirements for satisfactory soil and granular materials are specified in Division 31 Section "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.
2. Provide imported granular materials.
3. Provide imported topsoil.

C. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer complying with SSPC-Paint 20 or SSPC-Paint 29 zinc-rich coating.

1. Use coating with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24)..

D. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:

1. Type: Shredded hardwood.
2. Size Range: 3 inches maximum, 1/2 inch minimum.
3. Color: Brown.

E. Tree- and Plant- Protection Zone Fencing:

1. The Contractor is to furnish all labor, materials, equipment, and supplies and perform all operations required to complete this work.

2. Protection zone fencing shall be temporary orange construction fence, a minimum of 4-feet in height, mounted to 2-inch x 4-inch wood or steel fence posts, set a maximum of 10 feet o.c. Fence enclosure shall be defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated or as determined by the arborist, whichever is greater.

PART 3 - EXECUTION

3.1 PREPARATION

A. Monuments: Locate, protect and maintain benchmarks, monuments, batter boards, survey control points and other reference points from disturbance during construction. Protect all reference points against movement, injury, and displacement and replace those, which become disturbed as the result of any operations of this Contract. Monuments, benchmarks, and other reference features shall be carefully protected by Contractor. Should any be disturbed or damaged by any cause, the Contractor shall have same replaced to original location, elevation and condition by a NYS Licensed Land Surveyor at the cost and expense of the Contractor.

B. Verify all limiting boundaries such as permanent and temporary easements, property lines, rights-of-way and grading limits have been accurately located and clearly marked. Where appropriate, verify that pipeline routings and other work limits have been accurately located and clearly marked.

C. Locate and clearly identify trees, shrubs, and other vegetation to be removed or relocated. Wrap a 1-inch blue vinyl tie tape flag around each tree trunk at 54+/- inches above the ground.

D. Carefully plan and execute operations so as to avoid damage to trees, shrubs, plants, etc.

E. Verify that temporary erosion- and sedimentation-control measures are in place.

F. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner's Designated Representative.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Comply with all federal, state, and local laws, ordinances, rules, and regulations.

B. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

D. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

E. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Prior to the start of any site operations, fence all trees and groups of trees, shrubs or planting beds which may interfere with site operations and are not designated to be removed. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation. Maintain fencing during full construction period. Remove temporary fencing when no longer needed or when acceptable to the Architect/Engineer.

B. Protect trees against cutting, breaking, bruising of bark. Where, in the opinion of the Architect/Engineer, the Contractor does not exercise reasonable care, the Architect/Engineer may require trunks to be wrapped with protective fencing.

C. Tie back flexible limbs that may be damaged by passage or activity of equipment beneath trees. Where limbs cannot be tied back and equipment cannot avoid limbs or branches, prune back limbs, only after approval of the Architect/Engineer.

D. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

E. If recommended by the Arborist, mulch areas inside tree-protection zones and other areas indicated. Apply 4-inch average thickness of organic mulch. Do not place mulch within 6-inches of tree trunks.

F. Protect Tree- and Plant- Protection Zones. Refer to Part 1 “Project Conditions” for additional information.

G. Maintain protection zones free of weeds and trash. Mow grass as needed to maintain a 2-to 4-inch grass height.

H. Trenching near Trees: Obtain arborist approval for work required in root zones and protection zones. Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Tunnel past established trees for a minimum distance of 7 feet each side of the trunk. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

I. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.

J. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition.

Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

K. Prune roots that are affected by temporary and permanent construction.

1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
2. Cut Ends: Coat cut ends of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other coating formulated for use on damaged plant tissues and that is acceptable to arborist.
3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
4. Cover exposed roots with burlap and water regularly.
5. Backfill as soon as possible according to requirements in Division 31 Section "Earth Moving."

L. Root Pruning at Edge of Protection Zone: Prune roots 12 inches outside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.

M. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

N. The Contractor will be held responsible for damage to trees as a result of not following the procedures outlined herein, not exercising reasonable care or by negligence.

O. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect/Engineer or Owner's Designated Representative.

P. Dead or Dying Trees:

1. All trees, which, upon completion of the project, are found to be in a dead or dying condition (more than 50% dead or in an unhealthy condition) as the result of the failure to adhere to the above precautionary measures, shall be removed to 12 inches below finished grade and replaced, in a designated location, with a tree of like size and species at the expense of the Contractor. The tree shall be guaranteed for a period of 12 months or the project's guarantee period, whichever is longer.

Q. Damaged Trees:

1. Trees damaged in any manner, but deemed savable, may be repaired to the satisfaction of the Architect/Engineer, by an approved tree surgery company.
2. Should the repaired tree(s) die within 12 months of final acceptance of the project, the tree(s) shall be removed and replaced as above.

R. Relocation of Trees/Shrubs/Plants:

1. Dig trees/shrubs/plants during appropriate season and plant immediately in the designated location. Should it be necessary, due to the sequence of work, to delay planting in the new permanent location, dig and store tree/shrubs/plants in accordance with accepted standard

practices. Trees may be dug with a tree spade, but must be planted immediately in the permanent or an approved temporary location.

3.4 EXISTING UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.

1. Notify applicable utility company or utility owner and obtain approval for shutting off and terminating existing utility services.
2. Perform work in accordance with applicable utility company requirements.
3. Identify utility service terminations on project record documents. Place markers to indicate location of disconnected utility service below grade.
4. Notify Owner's Designated Representative in writing when disconnecting and sealing/capping of each utility service is complete.

B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. The Contractor shall coordinate at least two weeks in advance with the Architect/Engineer, the Campus, and Owner's Designated Representative to schedule temporary service shut downs needed to complete the work.
2. Notify Owner's Designated Representative and Owner in writing not less than 48-hours in advance to confirm proposed utility interruptions.
3. Any one disruption shall not exceed 4-hours unless mutually agreed to by the Owner, Owner's Designated Representative, Architect/Engineer and Contractor.
4. Temporary service shutdown durations, time of day, and day of the week will be restricted by the Owner. Temporary power, water or sanitary shut downs will not be permitted during normal weekday business hours for the facility/campus. The Contractor shall include in the price bid all costs for labor, equipment and materials necessary to complete the connections when the facility/campus is not in operation (e.g. weekends, holidays, or if approved by the facility/campus weekdays between 5:00 p.m. and 6:00 a.m.). The date, time and duration of any service shutdown shall be mutually agreed upon between the Contractor, Owner's Designated Representative, the Campus, and Architect/Engineer, prior to start of work.
5. Do not proceed with utility interruptions without Owner's Designated Representative written permission.

C. Excavate for and remove underground utilities indicated to be removed.

D. Provide bypassing of flows as needed.

3.5 CLEARING AND GRUBBING

A. The Contractor shall schedule and conduct his operations to minimize erosion of soils and to prevent silting and muddying of streams, rivers, wetlands, impoundments and land adjacent to or affected by the work. Erosion control measures shall be implemented and the area of soil exposed by construction at any one time shall be kept to a minimum. Final restoration shall be carried out as soon as possible following completion of clearing and grubbing operations.

B. Contractor shall protect all existing site utilities, appurtenance and amenities to remain.

C. All operations shall be done in a manner so that present growth will blend with the limits of construction and a natural appearance will be attained.

D. Clearing consists of cutting and properly disposing of all trees (designated to be removed) and other vegetation, down timber, snags, stubs, brush, shrubs, bushes, as well as boulders, rubbish, debris, and other objectionable matter and materials occurring within areas to be cleared.

E. In wooded areas, trees may be removed and/or trimmed as required, for the proper installation of the work. Gross and unnecessary removal of trees is not permitted.

F. Grubbing consists of the removal and proper disposal of all stumps, roots, duff, grass, turf, sod, debris, vegetation, foundations, buried structures and pipes, as well as other objectionable matter and materials occurring within the areas to cleared and grubbed.

G. Remove stumps and roots to their full depth within 5-feet of underground structures, utility lines, footings and concrete or paved surfaces. Remove stumps and roots to a clear depth of 3-feet below subgrade in other locations.

H. Use hand method for grubbing within protection zones of trees to remain.

I. Stumps of trees removed shall be grubbed, ground or cut.

J. All stump holes shall be backfilled and properly compacted to the satisfaction of the Owner's Designated Representative and/or Architect/Engineer. Backfill materials shall include: granular materials meeting NYSDOT Item 304.14 in areas under and within 5 feet of structures or buildings; granular materials meeting NYSDOT Item 304.12 in areas under and within 5 feet of pavements (asphalt, concrete or similar) and utility structures; and, Select Earth in all other areas. Backfilling shall be completed within one (1) week after start of work on the tree. Any open excavation as a result of this work, shall be properly protected to avoid harm to public, facility employees, work, equipment, or others.

3.6 FELLING OR PRUNING TREES

A. If it is impractical to fell trees as a whole, remove them in sections according to standard practices of professional tree removal. Fall trees to the center of the area being cleared to minimize damage to trees that are to be left standing.

B. Fall trees away from the slope embankments; stream banks, wetlands, swamps or other water courses; buildings; public or private roadways or sidewalks; and, trees/shrubs to remain.

C. Fall trees in a manner to minimize damage to existing pavements or structures.

D. Immediately after felling a tree, remove branches, cut trunk and limbs, and remove all materials from the site. All merchantable timber and wood, which is removed, shall become the property of the Contractor.

E. All trees to remain shall not come in contact with any machine or appliance that will in any manner injure, sear, or kill them.

F. All trees left standing, which have been trimmed or become scarred by Contractor's operations, shall be promptly repaired by properly cutting, smoothing, and painting.

G. Trees to be trimmed shall be evenly cut to achieve neat severance with the least possible damage to trees.

H. Prune branches that are affected by temporary and permanent construction. Prune branches as follows:

1. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.
2. Pruning Standards: Prune trees according to ANSI A300 (Part 1) and the following:
   a. Type of Pruning: Cleaning.
   b. Specialty Pruning: Restoration.
3. Cut branches with sharp pruning instruments; do not break or chop.
4. Do not apply pruning paint to wounds.
5. Chip removed branches and dispose of off-site.

I. Where roots are cut or damaged, apply wet burlap to prevent drying out.

3.7 TOPSOIL STRIPPING

A. Prior to any excavation or embankment or as directed by the Architect/Engineer, topsoil shall be removed. Topsoil work, such as stripping, stockpiling and similar work shall not be carried out when soil is wet so that tilth of soil will be destroyed.

B. Remove sod and grass before stripping topsoil.

C. Topsoil shall be stripped full depth in building areas, and all areas to be regraded, resurfaced or paved within the contract limit work area. Stripped topsoil shall be stockpiled in a location on site acceptable to the Owner’s Designated Representative or Architect/Engineer.

D. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, stones, and other objects more than 2 inches in diameter; trash, waste, branches, brush, debris, weeds, roots, and other waste materials.

E. Stockpile cleaned topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water. Provide and maintain erosion control measures around stockpiles including, but not limited to, silt fence.

1. Limit height of topsoil stockpiles to 72 inches.
2. Do not stockpile topsoil within protection zones.

F. Stockpiled topsoil will be used in finish grading for preparation of lawns and planting beds. No topsoil shall be removed from the site without the prior approval of the Architect/Engineer. All topsoil used in grading shall be screened to remove any materials larger than 2-inches in diameter.

G. Where trees are indicated to be left standing, stop topsoil stripping a sufficient distance to prevent damage to main root system.

H. If the Contractor fails to strip and stockpile all available topsoil within the limits of areas disturbed by his work, the Contractor shall at no cost to the Owner, import adequate topsoil to cover the disturbed areas to a minimum depth of 4-inches.

I. If topsoil does not exist, in sufficient quantity, on the site, the Contractor shall deliver, place and spread a sufficient quantity of acceptable topsoil necessary to achieve a depth of 6 inches over the entire area of the site indicated on the contract drawings to receive lawns and planting. Secure all topsoil from an approved source and submit a mechanical and chemical analysis to the Architect/Engineer for any topsoil, which is to be delivered.

3.8 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove all below-grade wood, organic material, and metal construction within demolition or removal area.

C. Remove slabs, paving, curbs, gutters, and aggregate base as indicated. Remove to the minimum extent possible to complete the work while utilizing existing joints.

1. Prior to full depth removal, saw cut asphalt and concrete paved surfaces. Use a saw, which will cut a neat, straight joint line along line of existing pavements to remain. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.
3. Carefully remove walks and curbs to the minimum extent possible. Store and protect for reuse if so designated.

D. All fences, signs, and other obstructions encountered shall be carefully taken-up and stored for subsequent replacement.

E. Do not disturb property markers unless absolutely necessary. If it becomes necessary to disturb or remove a property marker, have a licensed land surveyor provide four (4) ties to the marker. The licensed land surveyor shall replace the marker as soon as possible.

F. Remove and turn over to the Owner all items indicated to be salvaged.

G. Remove, store, protect, and reinstall all items indicated for relocation.

H. Remove and dispose off-site underground structures and piping indicated for removal on the Contract Drawings.

3.9 REGRADING AT OR ADJACENT TO PROTECTION ZONES

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.

C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

D. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.10 BACKFILLING

A. The Contractor shall be responsible for providing all necessary fill materials to backfill the resultant hole from removal of all plant materials.

B. Water in sufficient quantity may be required to assure compaction.

C. Earth and granular materials for backfill, shall be in accordance with Division 31 Section “Earth Moving”. Refer to Part 3 “Clearing and Grubbing” of this specification for additional information.

D. All excavations shall be backfilled to the original surface of the ground or as otherwise specified, or directed. Provide proper surface drainage and provide uniform levels and slopes. Backfilling shall be done with suitable excavated materials approved by the Architect/Engineer, and satisfactorily compacted.

E. The Architect/Engineer shall be the sole judge of what constitutes unsuitable material for backfill.

3.11 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them in accordance with requirements of all federal, state, local laws and ordinances off Owner's property. Remove cleared materials from the site as the work progresses.

B. Remove cleared materials from the site as the work progresses. All wood and brush shall be disposed of within 15 days after cutting or felling unless otherwise approved by the Architect/Engineer.

C. On site burning of combustible cleared materials is not permitted. On site burial of cleared materials is not permitted.

D. Leave site in a neat and orderly condition.

3.12 DUST & NOISE CONTROL

A. Complete dust and noise control in accordance with Division 31 Section “Earth Moving”.

3.13 DEWATERING

A. Complete dewatering in accordance with Division 31 Section “Earth Moving”.

END OF SECTION 311000

SECTION 312100 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Earth excavation.
2. Cutting and filling of subgrade.
3. Earthen embankments.
4. Preparation of subgrade, including excavation and backfill, for buildings, structures, and foundations.
5. Excavating and backfilling trenches for utilities and pits for buried utility structures.
6. Preparing subgrades, including excavation and backfill, for slabs-on-grade, walks, pavements, turf and grasses, and plants.
7. Excavation and removal of unsuitable bearing material.
8. Soils and backfill materials consolidation and compaction.
9. Grading outside building lines.
10. Furnishing and placing earth and granular materials.
11. Compaction and testing.
12. Subsurface drainage backfill for walls and foundation/footing trenches.
13. Subbase course for concrete walks and pavements.
14. Removing from site excess and/or unsuitable fill.
15. All other associated earthwork as necessary to perform the work under this Contract in conformance with the alignments, grades and detailed sections provided.

B. Related Sections:
1. Drawing S001 - **"Cast-in-Place Concrete"**
2. Divisions 22 and 26 Sections for installing underground facility utilities and buried utility structures.
3. Division 31 Section **"Site Clearing"**

C. Special Requirements
1. Upon excavation, the subgrade shall be inspected by a qualified and independent testing representative obtained by the Owner. Subgrade shall be approved by the Owner's representative before any new construction begins. Results of the tests must be reviewed and approved by the Architect/Engineer.
2. All excavation, fill or backfill placement, and utility construction shall be performed in the dry. The contractor shall be prepared to dewater as necessary. Subsurfaces shall be kept free of

water, subjected to minimum amount of construction traffic, exposed no longer than necessary, and not permitted to freeze.

3. Site-Specific geotechnical information – See the Geotechnical Reports

1.3 DEFINITIONS

A. Backfill: Aggregate or earthen material or controlled low-strength material used to fill a trench excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

C. Borrow Soil: Satisfactory soil imported from off-site (or on-site if permitted) for use as fill or backfill.

D. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

E. Embankment Foundation: Surface area upon which an embankment or fill is constructed.

F. Excavation: Removal of material encountered to subgrade elevations, lines, and dimensions required and the subsequent disposal of materials removed.

1. Additional Excavation: When excavation has reached required subgrade elevations, notify the Owner's Designated Representative, who will make an inspection of the conditions. If Architect/Engineer determines that bearing materials at required subgrade elevations are unsuitable, continue excavation until suitable bearing materials are encountered and replace excavated material as directed by Architect/Engineer.
2. Unauthorized Excavation: Consists of removal of materials beyond required subgrade elevations or dimensions without specific direction of the Architect/Engineer or Owner's Designated Representative. Unauthorized excavation, as well as remedial work directed by the Architect/Engineer or Owner's Designated Representative, shall be at Contractor's expense. Fill of unauthorized excavations shall be as follows:
    - Under footings or foundation bases, fill of unauthorized excavations under footing or foundation bases shall be accomplished by extending lean concrete or well-graded crushed aggregate fill to bring elevations to proper position, when acceptable to Architect/Engineer.
    - In locations other than those above, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by the Owner's Designated Representative.
3. Unclassified Excavation: Unclassified excavation shall consist of the excavation and disposal of all materials or obstructions, of any description, encountered during construction, unless otherwise specified.

G. Fill: Aggregate and/or earthen soil materials used to raise existing grades.

H. Loam: Soil mixture consisting of the following proportions:

Sand	30 - 50%
Silt	30 - 50%
Clay	0 - 20%

I. Rock: Solid hard material located in ledges, bedded deposits and unstratified masses, and all natural conglomerate deposits so firmly cemented as to present all the characteristics of solid rock, which must be removed by blasting or pneumatic hammers. Rock does not include shale, slate, soft sandstone, hardpan, masonry or concrete rubble, boulders less than 2 cubic yards, such other rock material which is decomposed, stratified, weathered or shattered, or any material capable of being removed by a well maintained Caterpillar 225 power shovel, or equivalent.

J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, utility structures, pole bases, or other man-made stationary features constructed above or below the ground surface.

K. Subbase Course: Aggregate layer placed between the subgrade and asphalt pavement, concrete pavement, hardscape or stabilized topsoil area.

L. Subgrade or Subgrade Surface: Uppermost undisturbed surface of an excavation or the top surface of a compacted fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

M. Suitable Material: A material whose composition is satisfactory for use in embankment, backfill, or fill construction. Determinations of whether a specific material is suitable for a specific application shall be made by the Owner’s Designated Representative or Architect/Engineer.

N. Topsoil: Refer to Division 31 Section "Site Clearing".

O. Unstable Material: (if encountered) Unstable material shall mean debris and all wet, soft, or loose material, which does not provide sufficient bearing capacity to satisfactorily support pipes, structures or other work placed thereon.

P. Unsuitable Material: Unsuitable material shall mean excavated material, which in the opinion of the Owner’s Designated Representative or Architect/Engineer, does not meet specification requirements for backfilling, embankment, or filling purposes and includes unstable material.

1. Unsuitable material shall fall into two specific categories. The first shall be that material which would be unsuitable under any circumstances including unstable materials. This category includes materials containing humus, spongy material, roots, stumps, muck, peat, and any other objectionable material. This material shall be disposed of in an approved off-site spoil area.
2. The second category shall consist of material, which is unsatisfactory for backfill because of its moisture content at the time of excavation. This material shall be stockpiled in approved areas on the Project site. This stockpiled material, when satisfactory for backfill, as determined by the Architect/Engineer, shall be used in other areas lacking backfill.
3. Excavated materials, which become unsuitable as a direct result of the Contractor's work shall result in rejection of the unsuitable material by the Architect/Engineer.

4. The Owner's Designated Representative or Architect/Engineer shall be the sole judge of what constitutes unsuitable material and into which category it falls.

Q. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Product Data: For each type of the following manufactured products required:
1. Geotextiles.
2. Low-strength material, including design mixture.
3. Warning tapes.

B. Material Test Reports: Contractor shall submit test results for laboratory gradation, moisture content (Proctor Tests), and maximum density tests certified by an approved testing laboratory or other requirements on the various imported soil and granular items, from each approved material source, prior to their use on the project:
1. Classification according to ASTM D 2487.
2. Laboratory compaction curve according to ASTM D 1557.

C. Provide material certifications for imported materials.

D. Submit list indicating locations where various soil earthen and granular materials will be utilized.

E. List of compaction plans of proposed compaction equipment and description.

F. Copies of measurements and computed volumes of unsuitable material removed shall be submitted to the Architect/Engineer.

G. Details of proposed sheeting, if required, shall be submitted by the Contractor to the Architect/Engineer for review and no sheeting shall be installed until written acceptance from the Architect/Engineer. Sheeting design shall be stamped by NYS licensed professional engineer.

1.5 QUALITY ASSURANCE

A. All finished grades shall be as shown on the Drawings or as specified by the Architect/Engineer. Contractor shall verify that survey benchmark and intended elevations for the work are as indicated. Contractor shall verify existing site conditions.

B. Contractor's independent testing agency shall be approved by the Architect/Engineer.

C. Erosion control measures in accordance with Division 31 Section "Erosion and Sediment Control", the Project SWPPP and the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002) shall be followed.

D. When placing fill and backfill, all compaction and soil moisture requirements as delineated in this specification shall be followed. Lift thickness, and the compactive capabilities of the equipment used, shall be continually monitored by the Contractor to obtain the compaction efforts required.

E. Provide on-site at least one person who shall supervise the soil compaction operations, and who shall be thoroughly familiar with the various types of compaction equipment, proper compacting techniques and methods, and soils behavior, and who shall direct the compaction operations.

F. It is the responsibility of the Contractor to select, furnish and properly maintain equipment, which will compact the fill uniformly to the required density.

G. The Architect/Engineer will be the sole judge of the conformance of materials, workmanship, and compaction with the requirements of the Contract Documents.

H. Work referencing NYSDOT (New York State Department of Transportation) shall be in compliance with the New York State Department of Transportation Standard Specifications (NYSS) dated May 1, 2008 (and any subsequent revisions).

I. Special Inspections: Owner will engage a qualified special inspector to perform the Special Inspections as outlined in Divisions 1.

1.6 COMPACTION TESTING AND REPORTS

A. Owner will engage and pay for a qualified and independent testing and inspecting agency to complete field compaction density testing for all soils and granular materials utilized in the Work. All materials not meeting proper compaction requirements shall be removed and replaced. Costs to the Owner for additional testing of replacement materials shall be the responsibility of the Contractor.

B. Owner will engage and pay for a qualified and independent testing and inspecting agency to take samples and perform tests to determine optimum moisture content, and maximum density testing of various on-site soils to be utilized in the Work. Reports will be provided to the Contractor.

C. The Owner reserves the right to request testing of all Contractor imported materials to verify conformance with approved materials. All soils and granular materials not meeting the proper gradation requirements nor previously approved laboratory maximum density tests as submitted by the Contractor shall be removed. Costs to the Owner for testing of materials, which are found not in conformance with approved materials, shall be the responsibility of the Contractor.

1.7 PROJECT CONDITIONS

A. When work is in public rights-of-way, the Contractor shall make necessary arrangement for permits, as required, at no extra cost to the Owner.

B. The Contractor shall be required to ascertain the complete extent of all permits required governing dewatering operations, and shall be bound by their conditions and provisions.

C. Provide and maintain emergency ingress/egress to the site at all times. Provide and maintain pedestrian and vehicle access to active facility, including but not limited to designated doors, sidewalks, and parking areas.

D. If trench widths and depths are exceeded, concrete cradles or other special installation procedures may be required and shall be provided where directed by Architect/Engineer. All additional costs, including the cost of redesigns, shall be borne by Contractor.

E. Moisten or dry backfill materials to the proper moisture content as determined in accordance with ASTM D1557, Method C in order to obtain proper compaction.

F. Utilities shown on the Contract Drawings are for the convenience of the Contractor, exact locations are not guaranteed. The Contractor shall verify existing utilities with the proper authorities.

G. Notify Dig Safely New York (UFPO) prior to commencing any excavation. Locate and identify existing underground and overhead services and utilities within contract limit work areas. Provide adequate means of protection of utilities and services, which are not designated to be removed. Repair utilities damaged during site work operations at Contractor's expense.

H. The project site Owner is not a member of Dig Safely New York. The Contractor alone shall be responsible to locate all utilities and services outside the public rights-of-way. The Contractor shall complete test pits as needed to confirm underground utilities and services. The cost of all test pits shall be included in the price bid. Provide adequate means of protection of utilities and services, which are not designated to be removed. Repair utilities damaged during site work operations at Contractor's expense.

I. Minimize interference with adjoining roads, streets, walks, parking areas and other adjacent occupied or used facilities during earth moving operations. Refer to Division 32 Section "Maintenance and Protection of Traffic" for traffic maintenance information.

J. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Owner's Designated Representative.

K. Locate, protect, and maintain benchmarks, monuments, control points, and project engineering reference points. Reestablish disturbed or destroyed items at Contractor's expense.

L. The control of dust, noise, erosion, and sediment originating from construction operations is considered a critical responsibility of the Contractor. The Construction Manager will be the final judge of the adequacy of the Contractor's dust, noise, erosion, and sedimentation control. Work may be suspended by the Construction Manager until adequate dust, noise, erosion, and sedimentation control is attained.

M. Protect structures, utilities, sidewalks, pavements, buildings, and other services or facilities on site and adjacent to the site from damage caused by earth moving operations or other work in support of Contractor operations. Cost of repair and restoration of damaged items shall be at Contractor's expense.

N. The Contractor shall take precautions to protect from harm the work of other contractors on site, existing facilities, as well as adjacent property. The Contractor shall be responsible for all damage or injury done to pipes, structures, utilities, pavement, buildings, property or person as a result of work performed to complete this contract. The Contractor at his own expense shall repair or

replace such property or item to the satisfaction of the property owner, utility owner, public agency having jurisdiction, Architect/Engineer and Construction Manager.

O. When it is necessary to haul materials over the streets or pavements, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements. In all cases, where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as directed and keep the crosswalks, streets, pavements and drainage ways clean and free from dirt, mud, stone, and other hauled materials.

P. Contractor shall be responsible for cleaning private and public; roads, parking areas or walkways, of any material carried onto these roads or pavements by trucks or other equipment completing work in support of this project. Associated costs shall be included in price bid.

Q. The following practices are prohibited within tree- and/or plant-protection zones:

1. Storage of or stockpiling of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
8. Do not direct vehicle or equipment exhaust towards protection zones.
9. Prohibit heat sources, flames, and ignition sources within or near protection zones.
10. Do not store materials potentially harmful to tree roots. Potentially harmful materials include, but are not limited to petroleum products, cement, lime, paints, detergents, acids and cleaning agents.

R. The Owner and Architect/Engineer do not guarantee that all required excavation can be executed by use of machinery. In some cases, it may be necessary to revise proposed alignments, which may preclude the use of machinery. In this event, the Contractor shall be required to perform this work by any method at the same price(s) bid in the Proposal, with no additional compensation due to the inability to use machinery.

S. The existing ground elevations as shown on the Drawings are believed to be reasonably correct. The Contractor shall satisfy himself, however, by actual examination of the sites of the work, as to the existing elevations and the amount of work required under this section. No claim shall be made by the Contractor for additional compensation for conditions other than that shown.

T. The Contractor shall remove any waste material or other debris that has accumulated as a result of the work of this section and dispose in conformance with applicable legal requirements and in a manner acceptable to the Construction Manager or Architect/Engineer.

U. Soil reports and boring logs: Refer to **Division 00, Section 00 89 00 - Geotechnical Investigation Data.**

1.8 TRIAL EXCAVATIONS

A. After the Contract is awarded, and prior to fabrication of steel and other framing members, the Contractor shall perform trial excavations, as directed by the Architect/Engineer, to verify certain existing conditions which may affect the proper dimensioning and fit of steel or other framing members.

B. Contractor shall construct test pit excavations to determine the locations of underground utilities or structures as shown on the plans and/or as ordered by the Construction Manager or Architect/Engineer. Underground utilities and/or structures shall be located and tied off for future stake out. The test pit shall be properly backfilled and compacted. Surface restoration shall be performed as required and as ordered by the Construction Manager or Architect/Engineer.

1.9 STORAGE AND HANDLING

A. Stockpiling of earth spoil or excess earth material on the site or storage of excavated materials for reuse shall be done in a manner which will not hinder the progress of the work; cause any nuisance; or cause spillage or tracking of materials from the transporting vehicle onto public or private roadways, parking areas, sidewalks or pavements, or cause an inconvenience to adjacent property owners or tenants, general public, other contractors, or facility operations.

B. Obstruction of roads, driveways, parking areas, sidewalks, or interference with drainage along curbs, gutters, ditches, or drainage channels with stored material is not permitted.

C. On-site topsoil suitable for final placement and grading shall be excavated and stockpiled on-site for future use in accordance with Division 31 Section “Site Clearing”. Imported topsoil shall be stockpiled on-site in a separate location from on-site topsoil. Each stockpile shall be well-shaped and graded in order to shed water and to avoid contamination by other granular or earth materials temporarily stockpiled on-site. Provide and maintain erosion control (silt fence) around stockpiles.

1.10 SCHEDULING

A. If required to complete the work properly, the Contractor shall obtain grading releases from property owners near trenching or other grading operations at least ten (10) days before commencement of the work.

B. Do not commence site earth moving operations until temporary erosion- and sedimentation-control and tree- and plant-protection measures are in place.

C. Allow time to rework, screen and moisture condition on-site and/or imported soils for placement.

D. Except by permission of the Architect/Engineer, not more than 200 feet of trench shall be opened at any one time. Not more than 100 feet of trench may be opened in advance of the completed pipe laying operations; and not more than one street crossing may be obstructed by the same trench at any one time.

E. Schedule the work to allow ample time for laboratory tests and to permit the collecting of samples and the performing of field density tests during the backfilling and compaction operations.

F. All subgrades shall be approved by Architect/Engineer or Construction Manager before pipes, structures, and facilities are installed or concrete is placed. Results of the tests must be reviewed and approved by the Architect/Engineer.

G. Do not backfill against concrete elements until bearing surfaces have reached design strength or are properly braced and backfilling operations are approved.

H. Compaction shall not take place in freezing weather or when materials to be compacted are frozen, too wet or moist, or too dry.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. **Common Earth:** (for use under nonpaved areas located at least 5-feet outside building/structure limits only) - Sand, loam, gravel, or similar materials free from debris, frozen materials, organic materials, or other deleterious material, and containing some rock fragments, stones, and pebbles, not exceeding 4 inches in their largest dimension and meeting the following requirements:

1. Plasticity index of not more than 30 - ASTM D424.
2. Minimum laboratory dry weight at optimum moisture content of 110 pounds per cubic foot.

Provide imported Common Earth fill materials as required to complete the work. Contractor shall obtain rights and pay all cost for imported materials.

Proposed Common Earth fill (imported or site excavated) material shall be inspected, tested, and laboratory report issued prior to use in the work.

B. **Select Earth:** Sand, gravel, and similar material which shall be free from silt, clay, loam, organic material, roots, debris, waste, frozen material, or other deleterious materials, and shall only contain small amounts (less than 10 percent) of stone, pebbles, or lumps over one inch in greatest dimension, but none over 2 inches in greatest dimension.

Imported select earth materials shall meet requirements of the NYSDOT Standard Specification Section 203-2.02C except that no material shall exceed 2-inches in their largest dimension.

C. **Imported Topsoil:** Imported topsoil shall meet the requirements of NYSDOT Specification Section 713-01, except provide 6 percent minimum organic material. The Contractor shall be responsible for amending imported topsoil with approved materials and by approved methods to meet these requirements and in accordance with Division 32, Section “Turf and Grasses” at no additional cost to the Owner. The material shall be stockpiled, tested and approved by Owner’s Designated Representative prior to use on the project. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4-inches deep; do not obtain from bogs or marshes.

D. Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

E. Acceptance of all types of soil materials shall be based on the above requirements, and the Owner’s Designated Representative or Architect/Engineer shall make final acceptance. Such acceptance or rejection of materials is binding upon the Contractor.

2.2 GRANULAR MATERIALS

A. **Cushion Sand:** The material shall meet the requirements of NYSDOT Standard Specification Section 703-06, Cushion Sand.

B. **Bedding Sand:** Sand shall consist of clean, hard, durable, uncoated particles, free from lumps of clay and all deleterious substances. When dry, the sand shall meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
1/4 inch	100
No. 50	0-35
No. 100	0-10

The sand may be determined to be unacceptable if it contains loam or silt in excess of 10 percent of the total volume.

C. **Crushed Stone:** Material shall be clean, sound, crushed stone of uniform quality. It shall be a 50-50 mixture of NYSDOT primary size designation #1 and #2 stone as per NYSDOT Standard Specifications, Section 703-02, Material Designation 703-0201. Mixture shall meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
1-1/2 inch	100
1 inch	95-100
½ inch	45- 57.5
1/4 inch	0 - 7.5

D. **Subbase Material (Crusher Run):** Shall meet the requirements of NYSDOT Standard Specification Section 304-2, Type 2.

E. **Engineered Fill (run-of-bank gravel):** Material consisting of hard, durable particles and shall meet the requirements of NYSDOT Standard Specification Section 304-2.02, Type 4. Maximum particle size 2-inches, less than 40% by weight passing the No. 40 sieve and less than 10% by weight passing the No. 200 Sieve.

F. **Select Granular Fill:** The material shall meet the requirements of NYSDOT Standard Specification Section 203-2.02C, for Select Granular Fill.

G. **Underdrain Filter Material:** Shall meet the requirements of NYSDOT Standard Specification Section 605-2.02, Type II Underdrain Filter Material.

H. **Underdrain Sand Filter Material**: (Use with Type 1 Corrugated HDPE Underdrain only) Shall be coarse and medium sand meeting the following size range:

Sieve Size	% Passing
#10	97-100%
#18	85-100%
#60	0-20%

#100	0-3%

I. **Pea Gravel:** Shall be screened, washed gravel meeting the gradation requirements of NYSDOT primary size designation #1A stone as per NYSDOT Standard Specifications, Section 703-02.

J. **Light and Medium Stone Fill:** The material shall meet the requirements of NYSDOT Standard Specification Section 620-2.02 for light and medium stone fill.

K. Acceptance of all types of fill shall be based on the above requirements, and the approval of the Architect/Engineer or Geotechnical Engineer. Such acceptance or rejection of materials is binding upon the Contractor.

2.3 LOW STRENGTH MATERIALS

A. **Controlled Low Strength Material (CLSM):** Self compacting, flowable concrete material shall conform to ACI 229R with a compressive strength of 400 psi or as otherwise indicated on the plans or specifications.

B. **Controlled Density Fill (CDF):** "K-Krete" or approved equivalent with a compressive strength of 50 to 100 psi.

2.4 GEOTEXTILES

A. **Pavement Stabilization Geotextile Fabric:** The geotextile fabric for pavement stabilization shall be Mirafi HP270 as manufactured by Mirafi, ADS Geosynthetics 02x2HF, Propex 2x2HF or approved equal. The geotextile fabric shall be woven fabric of only continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew, and rot resistant. The fabric shall be UV stabilized.

Fabric Properties – Mirafi HP 270	Acceptable Value	Test Method
Apparent Opening Size (AOS)	30	US Std. Sieve
Permittivity, sec^{-1}	0.6	ASTM D4491
Flow Rate, $l/min/m^2$ (gal/min/sf)	163 (4)	ASTM D4491

B. **Geogrid:** The geogrid fabric for reinforcement shall be a polyester multifilament yarn woven in tension and finished with a PVC coating, such as Mirafi BXG-12 as manufactured by Mirafi, or approved equal.

2.5 ACCESSORIES

A. **Warning Tape:** Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility in bold readable lettering; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.

B. **Detectable Warning Tape:** Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility in bold readable lettering, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30-inches deep; colored as follows: (Detectable warning tape shall be a minimum of 12-inches wide for utilities where Drawings indicate tape shall be buried greater than 30-inches.)

1. Red: Electric.
2. Yellow: oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

C. **Tracer Wire*:*** Wire shall be 10 AWG stainless steel tracer wire. The wire shall be extended into tracer wire boxes with adequate excess wire to extend 2 feet above grade.

D. **Tracer Wire Boxes:** Tracer wire boxes in lawn areas shall be 4-inch shaft cathodic protection test boxes Model P445 DT Test as manufactured by Bingham & Taylor or approved equal. Provide cast iron rim and pentagon nut lid. Lid shall be blank with no lettering. Body of box shall be ABS plastic.
1. Box shall be 3-foot in length with standard base.
2. Provide each box with a terminal block containing four terminals.
3. The box shall not transmit shock or stress to the tracer wires and shall be plumb with the box cover flush with the surface of the finished grade.

2.6 COMPACTION

A. Utilize the proper compaction methods and equipment to suit the soils and conditions encountered. Mechanical, vibratory, pneumatic tampers or other method as approved by the Architect/Engineer shall be required.

B. Provide water in sufficient quantity as needed to assure compaction.

2.7 DEWATERING, DUST AND NOISE CONTROL

A. Provide all equipment and materials necessary to perform dewatering and dust control operations in a safe and satisfactory manner. Conform to the New York State Standards and Specifications for Erosion and Sediment Control, and Division 31 Section “Erosion and Sediment Control” for proper operations.

B. Standing water and/or saturated, unstable soil conditions will not be tolerated in areas to receive foundations, utilities, or asphalt or concrete pavements.

C. Provide noise suppression enclosures, if required and as determined by the Architect/Engineer. Enclosures, if required shall meet minimum requirements of 3/8-inch plywood enclosure lined with 2-inch rigid insulation.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain erosion and sedimentation controls during earth moving operations.

B. Before placing subsequent materials remove temporary protection installed to protect subgrades and foundation soils from freezing temperatures and frost.

C. Prior to start of work, the Contractor's surveyor shall verify that all boundaries of temporary and permanent easements and property lines are clearly marked in the field so that the work will not violate these boundaries.

D. The Contractor and his surveyor shall verify the locations and character of structures, underground lines, and subsurface conditions and verify that the described work will not adversely affect them.

E. The Contractor's Surveyor shall verify that grade stakes have been properly and accurately set.

F. The Contractor shall be responsible for providing all necessary fill materials.

3.2 METHODS OF CONTROL FOR EXCAVATIONS AND GRADING

A. The Contractor shall employ at the site a NYS licensed surveyor responsible for the proper layout of utilities, structures, and drainage. He shall maintain adequate stakeout control for inspection of the work and to accurately complete construction.

B. The alignment and depth of subgrades of all pipe trenches shall be determined by overhead grade lines or laser at Contractor's option, installed and maintained by his surveyor.

C. In the event that rock is encountered, the Contractor will take cross sections of the rock uncovered. No removal shall begin until adequate time has been given the Owner’s Designated Representative or Architect/Engineer for inspection and to verify the measurement of rock material.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EARTH MOVING, GENERAL

A. The work shall be performed by methods acceptable to the Owner’s Designated Representative or Architect/Engineer.

B. Excavation shall include the satisfactory removal and disposal of all materials encountered, regardless of the nature of the materials, or the manner in which they were excavated, except materials classified as rock excavation.

C. Excavate to subgrade elevations. Do not excavate rock until it has been classified and cross sectioned.

D. All pipe lines or existing structures encountered during the excavation operation and designated to remain shall be properly supported/protected to prevent damage.

E. Erosion and sedimentation control measures meeting the requirements of Division 31 Section "Erosion and Sediment Control" shall be used around all earthen material stockpiles.

F. Provide and maintain adequate temporary crossovers for pedestrian and vehicular traffic, including temporary gravel drives, steel plates, guardrails, lamps, flags; remove same when necessity for such protection ceases. All traffic maintenance shall be done in a manner satisfactory to the Owner's Designated Representative or Architect/Engineer.

G. Provide and maintain suitable temporary crossings over open trenches where necessary to maintain access for other Contractors, the Architect/Engineer or general public (if applicable).

H. The Contractor shall have available a supply of steel plates with minimum dimensions of 4 feet x 8 feet x 1 inch, or thicker, as required by jurisdictional authorities and to maintain emergency access and egress to the site. The plates shall be used to bridge open trenches crossing roadways, or driveways as directed by the Architect/Engineer. When used, they shall be secured against the possibility of shifting or dropping into the excavation. During winter months, these plates shall not be left in the roadway or driveway overnight unless specifically required by the Architect/Engineer.

I. When excavating in or adjacent to the traveled portion of highways, driveways, or parking areas take whatever measures are necessary to protect the road/drive/parking surfaces from becoming undermined.

J. Protect trees indicated to remain in accordance with Division 31 Section "Site Clearing".

K. All traffic maintenance shall be done in a manner satisfactory to the Architect/Engineer.

3.5 SOIL STABILIZATION

A. Sloped sides of excavations shall comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling and/or filling.

B. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross braces, etc. in good serviceable condition. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Extend shoring and bracing as excavation progresses.

C. Daily inspections of excavations shall be made by an authorized competent representative of the Contractor performing the excavation work.

3.6 DRAINAGE/DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

1. Surface and ground water shall be intercepted and removed before entering excavations. All necessary measures shall be taken. Earth dikes, ditches or other devices, if required, shall be constructed to prevent such flows.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
2. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations.
3. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

C. The Contractor shall at all times provide and maintain proper and satisfactory means and devices (i.e. ditches, temporary pipes, pumps, and/or other temporary construction) for the removal of all water entering the excavations. Water shall be removed as fast as it may collect, in such manner that shall not interfere with the execution of the work or in the proper placing of pipe, structures or other work.

D. The Contractor shall make his own determination as to required dewatering operations necessary to complete the work. Contractor shall have available at all times sufficient equipment, machinery, piping, and appurtenances for pumping water to keep excavations free from water during construction.

E. Where the presence of fine grained subsurface materials and high groundwater table may cause the upward flow of water into the excavation with a resulting quick or unstable condition, the Contractor shall install and operate a well point system to prevent the upward flow of water during construction.

F. All water removed from the trenches or excavations by pumping, bailing, siphoning, well-points, or other means shall be disposed of in such a manner so as to avoid damage to the work, work of other Contractors, surface and ground water, persons or property. Unless otherwise permitted by the Architect/Engineer, groundwater encountered within the limits of excavation shall be depressed to an elevation not less than 12 inches below the bottom thereof before pipe laying, concreting or masonry is started, and shall be so maintained until concrete and joint material have attained adequate strength.

G. The Contractor shall not discharge water from dewatering operations directly into any line or intermittent stream, channel, wetlands or surface water. The Contractor shall not discharge water from dewatering operations directly into the storm or sanitary sewer system without prior approval of the Architect/Engineer. If the quality of the trench water is not better than or equal to that of the receiving stream, the Contractor shall perform all work necessary to improve the quality of the removed water in accordance with all requirements of the agencies having jurisdiction. This work shall include, but not be limited to, filtration, settling, and screenings meeting the requirements of the New York State Standards and Specifications for Erosion and

Sediment Control to reduce the amount of sediment contained in the water to allowable levels, as acceptable to the Architect/Engineer, prior to disposal.

H. All costs to ensure proper drainage, dewatering and discharge from dewatering operations shall be at the Contractor's expense.

I. The Contractor shall be responsible for repairing, at his own expense, any ruts, gullies, sloughage, slides, and cleaning or repairing any catch basins or storm drainage lines which display signs of silt build-up during the course of construction until the contract is complete.

J. Provide adequate protection from the effects of possible uplift due to storm or groundwater where buoyancy might lift installed work or cause joint or structure failure during construction.

K. Protect the interior of installed work from the entering and accumulation of liquids, ice, and snow. Immediately remove and dispose any accumulation, which may occur.

L. Adjust, repair, replace, or clean all work, surfaces, and property, which may have been damaged as a result of any dewatering operation.

3.7 EARTH FILL

A. Unless otherwise specified, shown on the Contract Drawings, or directed by the Owner's Designated Representative or Architect/Engineer, trench and utility backfill material and earth fill located 5 feet outside pavement, building or structure limits shall be Common Earth while, earth fill to subgrade (where earth fill is permitted) located under or within 5 feet of buildings, structures or pavements shall be Select Earth.

B. To the extent it is available, Common Earth and Select Earth fill material shall consist of approved on-site materials excavated and removed to accommodate new construction. On-site soils modifications including screening and soils conditioning to meet gradation and compaction requirements will be required. When there are insufficient approved suitable materials on-site, import additional material from off-site at no additional cost to the Owner. The Contractor shall obtain all permits necessary to furnish off-site borrow.

C. The excavated material to be used for trench or structure backfilling or earth fill shall be stored and properly protected by the Contractor so that it will remain suitable for the intended reuse. Excavated materials, which become unsuitable as a direct result of the Contractor's work or lack of protections shall result in rejection of the unsuitable material by the Architect/Engineer.

D. No payment will be made for stockpiling, rehandling, transporting, removing, or disposing of any materials, which become contaminated or unsuitable and are subsequently rejected by the Architect/Engineer. No payment will be made for additional imported materials required to make up the deficiency in backfill or fill resulting from these rejected materials.

E. No extra payment shall be made for any excavating, stockpiling, rehandling, transporting, or disposing of any unsuitable material, the cost shall be included in the price bid. Any deficiency in backfill or fill shall be made up in spoil, if suitable and appropriate for application or by imported material acceptable to the Owner's Designated Representative or Architect/Engineer. No payment shall be made for making up any deficiency; the cost of such shall be included in the price bid.

3.8 SOIL CONDITIONING

A. Provide all wetting, drying, mixing and screening equipment and materials necessary to condition on-site soils to optimum moisture for compaction and required gradation.

B. Allow time to rework, screen and moisture condition on-site soils for placement.

C. If in the opinion of the Owner's Designated Representative or Architect/Engineer, the Contractor does not take reasonable care to protect and prepare suitable on-site soils for project use, the Contractor shall provide suitable imported materials at no additional cost to the Owner. Suitable imported materials shall include granular materials meeting NYSDOT Item 304.14 in areas under and within 5 feet of structures or buildings; granular materials meeting NYSDOT Item 304.12 in areas under and within 5 feet of pavements and utility structures; and, Select Earth in all other areas. Excess unsuitable materials replaced by imported materials shall be removed at no additional cost to the Owner. Refer to Part 1 "Summary – Special Requirements" and the geotechnical report for additional information regarding reuse of on-site soils.

D. Moisture Control: Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
   1. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material. Apply water in minimum quantity as necessary to prevent free water from appearing on surface during or subsequent to compaction operations.

E. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to permit compaction to specified density.

F. Stockpile or spread soil material that has been removed because it is too wet to permit compaction. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

3.9 MANNER OF EXECUTION

A. Materials for reuse on the project shall be stockpiled in an approved designated area adjacent to the work site. Suitable excavated material to be used for trench backfill or earthen fill shall be properly segregated by the Contractor to avoid mixture with topsoil or other unsuitable materials. Contamination of the excavated material as a direct result of the Contractor's work shall result in rejection of the contaminated material by the Owner's Designated Representative or Architect/Engineer.

B. The excavated material to be used for trench backfill or earthen fill shall be stored so that it will cause a minimum of inconvenience to public travel, active facility, adjacent owners or tenants and other contractors or subcontractors. Excavated material shall not be stored in the roadway, parking areas or sidewalks at any time.

C. Conduct operations in a manner, which will keep the work free of standing and flowing water and dispose the water so as not to damage or create a nuisance to the work, the public, surface, groundwater, and adjacent properties.

D. The accumulation of liquids, ice and snow in excavation, trenches, areas to be graded, and adjacent areas during construction is not permitted.

E. Keep graded surfaces well drained, but avoid erosion. Do not place earth or granular fill on wet grade, in water, or over frost, ice or snow. Excavations shall be maintained free of water.

F. Pipe trenching, building foundations, and structural undercuts: Under normal conditions, the excavation shall be vertical open cut from the ground surface. Tunneling beneath trees and certain surface structures may be required.

G. Bottom of excavations shall be finish graded by hand methods to receive bedding. The stone bedding shall be placed, compacted, and trimmed by hand to ensure the grade as necessary or as detailed.

H. Trench sheeting and bracing shall be placed as required to meet local, state and federal safety regulations.

I. The Architect/Engineer reserves the right to order sheathing and bracing to be left in place where removal may create damage or impair integrity of the work.

The right of the Architect/Engineer to order sheathing and bracing to be left in place shall not be construed as creating any obligation on his part to issue such orders. His failure to exercise his right to do so shall not relieve the Contractor of any liability for damages to persons or property occurring from or upon the work of constructing the sewer, water main, or appurtenances occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place in the trench sufficient sheathing and bracing to prevent the caving or moving of the ground, or disturbance of the completed work or any of the subsurface structures.

J. As required, the Contractor may add sufficient water during compaction to assure a complete consolidation of the material. This work shall be at no additional cost to the Owner. Where, in the opinion of the Owner's Designated Representative or Architect/Engineer, adequate consolidation is not being obtained, additional density tests may be ordered at the expense of the Contractor.

K. The Contractor shall make up any settlement of trenches or embankments with suitable material and stabilize at no additional cost to the Owner. This work shall be performed promptly and as directed by the Owner's Designated Representative

3.10 GRADING

A. General: Excavate, transport, place, compact and uniformly grade areas within the project limit (including excavated and filled sections and adjacent transition areas) to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
3. The degree of finish shall be that is ordinarily obtainable from either a blade, grader or scraper operations.
4. Subgrade surfaces shall drain, be compacted, and well graded.

B. Temporary Ditches, Swales: Install temporary or permanent diversion ditches and/or temporary pumps and take other steps as may be required to effectively eliminate potential water damage in accordance with the Division 31 Section "Erosion and Sediment Control" or instructions received from the Architect/Engineer.

C. The Contractor shall be responsible to subtract from finished grades shown on the plans the depths indicated on the Contract Drawings to ensure that the proper subgrade elevations are established. Any questions regarding subgrade elevations shall be answered by the Architect/Engineer. The Architect/Engineer's decision shall mandate.

D. Site Rough Grading:

1. Unauthorized Excavation: Do not perform excavation work for any purposes other than those indicated on the Contract Drawings, unless so directed by the Architect/Engineer.
2. Slope grades to direct water away from buildings and to prevent ponding.
3. Finish subgrades to required elevations within the following tolerances:
   - Turf, Planted Areas or Unpaved Areas: Plus or minus 1 inch.
   - Walks: Plus or minus 1 inch.
   - Pavements and slabs: Plus or minus 1/2 inch.

E. Grading under and within 10 feet of Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

F. Slopes: All swales shall be finished to drain readily. Unless otherwise indicated on the Contract Drawings, the surface of the subgrade in areas to receive lawns shall have a minimum slope of 2% unless otherwise agreed upon by the Architect/Engineer. All areas shall have positive drainage.

Round tops and bottoms of all slopes and drainage swales. Adjust slopes at intersections of cuts and fills and warp to flow into each other or into the natural ground surface without noticeable break. Establish earth at tops and bottoms of rock ledges in accordance with instructions received from the Architect/Engineers and in a manner that will prevent erosion.

G. Following stripping, the subgrade shall be compacted sufficiently to develop required compaction to a depth of at least 12 inches. Within building, pavement and retaining wall limits, no fill shall be placed until the subgrade has been proofrolled and approved by the Architect/Engineer. If subgrade ruts, waves or quakes during proofrolling, recompact or replace the unacceptable areas and proofroll again. Repeat process until satisfactory results are obtained as approved by the Architect/Engineer.

H. The Contractor shall dispose of excess excavated material in accordance with Part 3-Disposal.

3.11 EXCAVATIONS BELOW SUBGRADE

A. In case earth materials encountered at subgrades are unsuitable, the Contractor shall immediately notify the Architect/Engineer and shall excavate from the limiting subgrades shown or specified, to such new lines and grades, as will be ordered. Excavation below subgrade shall be done only upon express orders of the Owner's Designated Representative or Architect/Engineer.

B. At subgrade in pavement areas any loose, soft, wet, frozen, organic, or otherwise unsuitable material shall be removed.

C. Whenever excavations are carried beyond or below the lines and grade shown on the Plans, or as given or directed by the Owner's Designated Representative or Architect/Engineer, all such over-excavation shall be backfilled with special backfill such as: engineered fill; concrete or other materials as directed by the Owner's Designated Representative or Architect/Engineer.
   1. Fill over-excavations under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Whether over-excavation was directed by the Owner's Designated Representative or Architect/Engineer or unauthorized, backfill shall match the concrete strength of the foundation to be installed.
   2. Fill authorized or unauthorized over-excavations below other construction, pipe, or conduit as directed by Owner's Designated Representative.
   3. In pavement areas fill over-excavations with Engineered Fill.

D. Special backfill materials ordered by the Architect/Engineer as a result of unauthorized over-excavation by the Contractor without prior approval shall be provided by the Contractor at no additional cost to the Owner.

E. Payment for authorized over-excavation and subsequent backfill materials shall be on a unit price basis agreed between the Owner and the Contractor prior to the required work.

F. All material which slides, fails, or caves into the established limits of excavations due to any cause whatsoever, shall be removed and disposed of at the Contractor's own expense and no extra compensation shall be paid the Contractor for any materials ordered for backfilling the void areas left by the slide, fall, or cave-in. It is the Contractor's responsibility to make all excavations safe for ongoing construction.

3.12 UNSTABLE SOILS REMOVAL METHODS (if required)

A. Methods of Removal: Prior to the start of excavation operations, divert water away from work area and create dry conditions. Through the use of dragline, clamshell, or other necessary equipment, excavate and legally dispose of all unacceptable material.

B. Precautionary Measures: Divert the run-off of mud and water during the course of removal of wet and unstable material to avoid adversely effecting adjacent construction or site improvement operations. Barricade, rope off, or otherwise protect workmen, active facility, and the public from open excavations, waterholes, and other hazards resulting from the work of this operation.

C. Damage: The Contractor shall correct any damage to structures, foundations, site improvement work or adjacent property resulting from the work of this operation.

D. Degree of Removal Required: Remove all unstable material to the point of sound stable earth or as directed by the Architect/Engineer.

3.13 ROCK EXCAVATION (if required)

A. Degree of Removal required: Rock, if encountered shall be removed to depths (pay lines) as follows:
   1. In Building Areas
      a. 2-foot outside of concrete work for which forms are required, except footings.
      b. 1-foot outside perimeter or concrete forms of footings.

c. Outside dimensions of concrete work where no forms or exterior waterproofing treatments are required.

d. Under slabs on grade: to subgrade or 8-inches below bottom of concrete slab whichever is greater.

2. Under Areas to Receive Pavement - To the surface of the respective subgrade for such areas. Boulders or isolated pockets of rock shall be removed to 12-inches below the pavement subgrade and the resultant excavation backfilled with pavement subbase-course material.

3. Under Lawn and Planted Areas - To 24-inches below finished grade. Boulders or protruding rock outcropping where in the manner determined by the Architect/Engineer may be left undisturbed, provided a directive to this effect is transmitted to the Contractor.

4. In pipe trenches for pipes 18-inch diameter and smaller: 6-inches below bottom of pipe and 2-feet wider than outside diameter of pipe, one (1) foot each side of pipe, but not less than 3-foot minimum trench width.

5. In pipe trenches for pipes larger than 18-inch diameter refer to Contract Drawing details for additional rock removal requirements.

6. In all other cases to 6-inches below subgrade.

7. No payments will be made for excavation beyond pay lines.

B. No blasting is allowed.

C. The Contractor is responsible for measurement of rock material in place. (Also refer to Part 3 – Methods of Control of Excavation and Grading.)

D. Payment for rock removal shall be on a unit price basis agreed between the Owner and the Contractor prior to rock removal.

3.14 EXCAVATION FOR STRUCTURES

A. Excavations for structures and facilities shall be of sufficient size to give suitable room for proper construction procedures and no larger, or as shown on the Contract Drawings.

B. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services, backfilling and compaction work and other construction, and for inspections. Provide clearance sufficient for formwork. Banks and sides shall be at angle of repose of recline or sheathed, sheeted, shored and braced as required for safety, and conforming to all applicable laws, rules, regulations and codes. Remove shoring prior to backfilling, unless otherwise directed by the Architect/Engineer.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades and remove loose materials and debris from excavation so that all footings rest on solid rock or approved undisturbed bearing soil, to leave solid base to receive other work.

2. If unsuitable bearing soil is encountered at depth indicated on Contract Drawings for foundation, the Contractor shall notify the Architect/Engineer and shall not proceed further until direction is given.
3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

C. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots according to requirements in Division 31 Section "Site Clearing", Part 3 -Tree and Plant Protection.

D. Ensure that movement of equipment in excavation does not cause working or pumping of underlying soil, which is not to be excavated. Should equipment cause the soil to work or pump, use other methods of excavation to maintain the design bearing capacity of the soil.

3.15 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.16 EXCAVATION FOR UTILITY TRENCHES

A. General

1. Trenches shall be excavated as shown on the Contract Drawings.
2. Before any trenching operation starts, the line of work shall be cleared and all existing underground pipe lines and structures located. Test pits shall be opened where necessary to properly establish the location.
3. When trenches crossing other pipe lines occur, machine excavation shall stop at least 2 feet away from the location of any pipe. The pipe line shall than be uncovered by manual excavation before proceeding with machine work.
4. Trenches shall be kept free of water by pumping or providing well points.
5. Trench sheeting and bracing shall be placed as required to meet local, state and federal safety regulations.
6. All pipe lines encountered during the trenching operation shall be properly supported to prevent damage.

B. Excavate trenches to indicated gradients, lines, depths, and elevations.

C. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

1. Clearance: 12 inches minimum each side of pipe or conduit or as indicated on the various utility trenching and bedding details on the Contract Drawings.

D. **Trench Bottoms:** (Where bedding course is not required.) Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
4. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course. Refer to Part 3 – Rock Excavation

E. **Trench Bottoms**: (Where bedding course is required [e.g. facility water main, storm and sanitary sewers; and, pipes or conduits constructed under footings or foundations)

1. For pipes and conduits 18-inches or smaller in nominal diameter, excavate trenches minimum of 6-inches deeper, than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
2. For pipes 21- to 36-inches in nominal diameter excavate trenches minimum of 9-inches deeper, than bottom of pipe and conduit elevations to allow for bedding course.
3. Excavate trenches in rock or other unyielding bearing material to depths indicated above depending on pipe or conduit size to allow for bedding course. Refer to Part 3 – Rock Excavation.

F. **Trenches in Tree- and Plant-Protection Zones**:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Cut and protect roots according to requirements in Division 31 Section “Site Clearing”, Part 3-Tree and Plant Protection.

3.17 SUBGRADE INSPECTION

A. Notify Owner’s Designated Representative when excavations have reached required subgrade.

B. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 10 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Proof-rolling shall be witnessed by the Architect/Engineer or his designated representative.
2. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.

3. Excavate any loose, wet, frozen, or soft spots; unsatisfactory soils; and areas of excessive pumping or rutting, as determined by Architect/Engineer and replace with compacted backfill or fill as directed. Refer to Part 3- Excavations Below Subgrade.
4. If subgrade ruts, waves or quakes during proof rolling, recompact or replace unacceptable area and proof roll again.
5. Repeat process until suitable results are obtained as approved by the Architect/Engineer or his designated representative

C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect/Engineer and/or Owner's Designated Representative, without additional compensation.

3.18 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust. All stockpiled materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to other Contractors on site, to adjoining property owners and to the active facility.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

B. Topsoil suitable for final grading shall be removed and stored on-site separately from other excavated material.

C. Place, grade and shape stockpiles for proper drainage. Provide proper erosion control measures around stockpiles.

3.19 BACKFILL

A. All excavations shall be backfilled to the original surface of the ground or to the lines and grades as shown on the Contract Drawings or as otherwise specified, or directed. Backfilling shall be done with suitable excavated materials as shown on the Contract Drawings or approved by the Architect/Engineer, and satisfactorily compacted.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

C. Place and compact backfill in excavations promptly, as work permits but not before completing the following:

1. Acceptance of construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Inspection, testing, approval, and recording of locations and inverts for underground utilities has been performed and documented.
3. Removal of concrete formwork.
4. Removal of temporary shoring and bracing, and sheeting and backfilling of voids with satisfactory materials.
5. Removal of trash and debris from excavation.

6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

D. Excavated material considered by the Owner's Designated Representative or Architect/Engineer to be unsuitable for backfilling shall not be used, and shall be disposed in accordance with Part 3-Disposal of Excess and Waste Materials.

3.20 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Trenches under Footings: Backfill and compact trenches excavated under footings and within 18-inches of bottom of footings with 1000 psi CLSM to elevation of bottom of footings plus 3 inches.

1. Backfill trenches with 1000 psi CLSM where trench excavations pass horizontally within 18-inches of column or wall footings and that are carried below bottom of such footings or that pass under wall footings. Place CLSM to level of bottom of adjacent footing plus 3 inches.

D. Trenches where Concrete Encasement shown: Provide 4-inch thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course. Concrete is specified in Division 03 Section "Cast-in-Place Concrete."

E. Backfill voids with satisfactory soil while removing shoring and bracing.

F. Place and compact initial backfill as shown on details.

1. For soil and granular initial backfill: Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

2. For Controlled Low-Strength Material: Where CLSM indicated, place initial backfill of controlled low-strength material to a height of 12 inches over the pipe or conduit. Coordinate backfilling with utilities testing.

G. Place and compact final backfill to final subgrade elevation.

H. Install warning tape/detectable warning tape at elevations as shown on the Contract Drawings. Where not shown on the Contract Drawings install warning tape, centered and 12 inches above utility.

I. All pipes shall be protected from lateral displacement and possible damage resulting from backfill operations through, impact or unbalanced loading, by maintaining the pipe adequately embedded as detailed on the Plans. Except where detailed or due to subsoil conditions that require the use of concrete cradle encasement, all pipe embedment shall be placed so as to ensure adequate

lateral and vertical stability of the installed pipe during pipe jointing and backfill operations. A sufficient amount of the specified pipe backfill material to hold the pipe in rigid alignment shall be uniformly deposited and thoroughly compacted below, on each side, as well as above each pipe laid in accordance with the limits as shown on the Contract Drawings.

J. Pipe initial backfill shall be granular material or as indicated on the Contract Drawings. Pipe initial backfill materials placed any point below an elevation of 12 inches above the top of the pipe barrel shall be placed and compacted in layers not to exceed 6 inch lifts and shall be done simultaneously and uniformly on both sides of the pipe to the limits as shown on the Contract Drawings. All such materials shall be graded in the trench with hand tools in such a manner that they will be placed uniformly alongside the pipe. Each layer shall be thoroughly compacted to prevent settlement.

K. Trench final backfill when placed under pavements, utilities, buildings and other structures shall be Engineered Fill, Subbase Material or as indicated on the Contract Drawings and shall extend from the top of pipe initial backfill material to the bottom of the subbase. These materials shall be compacted in layers not to exceed 6 inch lifts. Each layer shall be thoroughly compacted to prevent settlement.

L. Trench final backfill outside of pavements, utilities, buildings, and other structures shall consist of common earth backfill or as otherwise shown on the Contract Drawings and shall extend from the top of pipe initial backfill material to the bottom of the topsoil. These backfill materials shall be compacted in layers not to exceed 12-inch lifts after compaction. Each layer shall be thoroughly compacted to prevent settlement.

M. Where trenches are constructed in, near, or across roadway ditches or other watercourses, the backfill shall be protected from surface erosion.

N. Trucks or other heavy equipment shall not be operated over pipelines until a minimum of 24 inches of backfill above the crown of the pipe has been placed and properly compacted.

O. Where pedestrian, bicycle or vehicle traffic is impacted; all trenches within paved areas shall be immediately restored to existing grade with temporary subbase material to allow traffic flow to continue until final restoration is complete.

P. Trench backfill for waterway crossings, if any, shall include 18 inches of medium stone fill rock lining meeting the requirements of this Section.

Q. Do not backfill trenches until tests and inspections have been made and backfilling is authorized by the Architect/Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

3.21 BACKFILLING OR PLACING FILL AROUND STRUCTURES

A. Location of Fill Types: (Where not otherwise shown on the Contract Drawings)

Type 1 (Select Earth Fill) - In all areas outside of building area to within 6" of finished grade, except at asphalt, concrete or brick pavements; curbing; concrete slabs; or graveled areas; where it is to be brought to an elevation appropriate to allow all subbase, asphalt, concrete or brick materials to be placed to grade as shown on the Contract Drawings.

Type 2 (Engineered Fill) - In all fill areas within the building up to the subgrade limits.

Type 3 (Subbase NYSDOT 304-2, Type 2) – Subbase under slabs. Depth as indicated on the Contract Drawings.

B. Backfilling around structures shall not be commenced until directed by the Owner's Designated Representative.

C. Prior to backfilling, a minimum of seven (7) days cure time shall elapse from the placing of cast-in-place concrete. The Contractor shall comply with any special requirements noted on the Contract Drawings. In no case shall backfill materials be allowed to fall directly on a structure or to damage the structure or its protective coatings.

D. Backfill around structures shall be deposited in horizontal layers not more than 6- to 8-inches in thickness and shall be compacted by tamping to prevent settlement. Backfill shall be no more than 4 inches thick when hand-operated equipment is used. Backfill shall be brought up evenly on all sides of structures so as not to subject the structure to unequal loadings. Do not backfill against unsupported walls or structures.

E. Evenly distribute stones in fill, none over 3-inch diameter within top 12-inches of subgrade. Remove rocks and compact each layer of fill before applying next layer. Slope to prevent ponding of water and to provide positive drainage away from building(s) and roadways. Dewater as required to prevent water from setting in excavated and graded areas. No backfilling will be allowed in areas full of water.

F. At all times the Contractor shall maintain and operate proper and adequate surface and subsurface drainage methods to the satisfaction of the Owner's Designated Representative in order to keep the construction site dry and in such condition that placement and compaction of fill may proceed unhindered by saturation of the area. During construction, the surface of the fill area shall be left in such condition that precipitation and/or surface water will run off.

G. Place underslab base material (Type 3 Fill as noted above) after all underslab mechanical lines, electrical conduits, etc. have been installed. Protect lines, etc. as required.

H. When a compacted course is indicated to be 6" thick or less, place material in a single layer. When indicated to be more than 6" thick, place material in equal layers, except no single layer more than 6" or less than 3" in thickness when compacted

3.22 EMBANKMENT CONSTRUCTION (if required)

A. Prior to the placement of materials in fill sections, remove all debris and other deleterious material and stabilize all existing surfaces.

B. Ground surfaces sloped steeper than 1 vertical on 4 horizontal shall be plowed, scarified, stepped, or broken up to permit bonding of the embankment with the existing surface.

C. Prior to placement of fill, the embankment foundation shall be thoroughly inspected by the Architect/Engineer. The embankment foundation shall be proof rolled by a roller or loaded ten wheeler (not less than 10-tons) to the satisfaction of the Architect/Engineer. Proofrolling shall be witnessed by the Architect/Engineer or his designated representative. Any loose, soft, wet, frozen, organic, or otherwise unsuitable material shall be removed and replaced with Engineered Fill. If embankment foundation ruts, waves or quakes during proof rolling, recompact or replace

unacceptable area and proof roll again. Repeat process until suitable results are obtained as approved by the Architect/Engineer or his designated representative.

D. Uniformly place and spread fill in successive horizontal layers not more than 8-inches in compacted depth for material compacted by heavy compaction equipment, and not more than 4-inches in loose depth for materials compacted by hand operated tampers. Complete compaction to proper density and complete compaction testing prior to placing additional backfill material.

E. The embankment shall be constructed with suitable on-site materials amended as needed to meet application. When on-site material supplies are exhausted, additional suitable imported material shall be used to complete the embankment. The Architect/Engineer shall be the sole judge of what constitutes suitable and unsuitable material.

3.23 SUBSURFACE DRAINAGE

A. Subdrainage Pipe: Specified in Division 33 Section "Subdrainage."

B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 12 inches.

1. Compact each filter material layer to 85 percent of maximum density with a minimum of two passes of a plate-type vibratory compactor.

C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 12 inches.

1. Compact each filter material layer to 85 percent of maximum density with a minimum of two passes of a plate-type vibratory compactor.
2. Place and compact impervious fill over drainage backfill in 6-inch thick compacted layers to final subgrade.

3.24 PREPARATION OF PAVEMENT SUBGRADES

A. Shape the entire subgrade to the required line, grade, and cross slope. Remove any protruding stones larger in diameter than 5 inches and fill the resulting depressions with Subbase Material.

B. Proof-roll the subgrade in accordance with Part 3 Subgrade Inspection. Proofrolling shall be witnessed by the Architect/Engineer or his designated representative. Any loose, soft, wet, frozen, organic, or otherwise unsuitable material shall be removed and replaced with Engineered Fill. If subgrade surface ruts, waves or quakes during proof rolling, recompact or replace unacceptable area and proof roll again. Repeat process until suitable results are obtained as approved by the Architect/Engineer or his designated representative.

C. Roll the subgrade surface with a roller weighing not less than 10 tons and achieve the required compaction densities. If during construction, the Contractor allows the subgrade to become wet and rutted, Contractor shall re-shape, aerate, and recompact subgrade, as required. Compact the entire width of the area to receive pavement and shoulders. Where subgrade failures occur due to rolling, thoroughly roll and compact these areas until no further consolidation is apparent.

D. When pavements cannot be placed immediately after the preparation of the subgrade, the entire, subgrade area shall be restricted to construction traffic until subbase materials can be placed.

E. After rolling, the finished subgrade shall not vary from the established grade and cross slope by more than the tolerance indicated in Part 3-Grading.

F. Do not disturb the finished subgrade by traffic or other operations and protect and maintain in a satisfactory condition until the overlaying granular materials are placed.

G. Any deteriorated subgrade areas that occur during construction are to be removed and repaired by Contractor prior to placement of subbase at no additional cost to Owner.

3.25 STABILIZATION FABRIC (if required)

A. The stabilization fabric shall be placed over subgrade only after the subgrade has been reviewed and limits for fabric established by the Architect/Engineer.

B. The fabric shall be unrolled over the designated subgrade area with a 24-inch overlap at fabric ends and allowing 18-inch overlap on sides. Prior to placement of subbase materials the fabric shall be pulled tight leaving no waves in the fabric.

C. Subbase materials shall be placed on the fabric in such a manner that equipment does not come in contact with the fabric, the fabric remains in tension and no damage to the filter cloth from equipment or subbase materials occurs. All fabric placed shall be covered with fill the same day.

D. Fabric, which becomes damaged prior to covering, shall be removed over its full width and replaced with new fabric, overlapping as stated above.

E. Maintain a minimum of 8 inches loose thickness of aggregate above stabilization fabric subject to traffic.

3.26 SUBBASE COURSES UNDER PAVEMENTS AND WALKS

A. The Contractor shall notify the Architect/Engineer at least three days before any subbase material is scheduled to be placed.

B. Place subbase course on subgrades free of mud, frost, snow, or ice.

C. Subbase shall be placed to the thickness and limits as shown on the Contract Drawings.

D. On prepared subgrade, place subbase course under pavements and walks as follows:

1. Install separation or stabilization geotextile (where required) on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Shape subbase course to required crown elevations and cross-slope grades.
3. Place subbase course 6 inches or less in compacted thickness in a single layer.
4. Place subbase course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
5. Each course shall be compacted with a vibratory compactor capable of producing a minimum dynamic vibration force of 27,000 pounds.

6. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness. Meet compaction requirements in accordance with this specification.

E. Compaction for driveways or roadways shall proceed in the longitudinal direction to traffic flow and be performed in accordance with NYSS Section 304. Compaction for parking areas shall commence on one side of an area and gradually proceed to the opposite side. When rolling has been completed in one direction, the rolling shall commence in a direction 90 degrees from the first rolling. Bus loops, if any shall be considered as a driveway and shall only be rolled longitudinally.

F. After completion of rolling, no traffic shall be permitted over the compacted course and no hauling other than necessary for bringing material for next course will be allowed. Each compacted course shall be tested with a straight edge 16 feet in length and any depressions greater than 1/4 inch in depth shall be re-graded until the depressions are corrected. The finished surface shall be smooth compact and dry.

G. All voids in the top subbase course shall be removed by re-grading and compacting to the satisfaction of the Architect/Engineer.

H. Thickness tests and compaction tests shall be conducted on the subbase courses. The Contractor shall hand dig holes, not less than 3" in diameter through the subbase, at locations designated by the Architect/Engineer. The Architect/Engineer shall measure the thickness and if any deficiencies are found, they shall be corrected. These tests may be conducted on an average of one test every 200 feet.

3.27 DRAINAGE COURSE UNDER CONCRETE BUILDING SLABS-ON-GRADE

A. Place subbase course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:

1. Install subdrainage geotextile on prepared subgrade as indicated, according to manufacturer's written instructions, overlapping sides and ends.
2. Place drainage course 6 inches or less in compacted thickness in a single layer.
3. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum density according to ASTM D 1557.
5. Place vapor barrier Specified in Division 03 Section "Cast-in-Place Concrete".

3.28 COMPACTION OF SOIL (EARTH & GRANULAR) BACKFILLS AND FILLS

A. Performance:

1. Compaction densities shown are percentages of the maximum density obtainable at optimum moisture content as determined by ASTM D1557, Method C.

2. Uniformly spread each layer. Moisten or dry each layer of material to achieve optimum moisture content. Unless otherwise specified or directed by Architect/Engineer, compact each layer of material to the following required densities:

Location	Percentage of Modified Proctor Test Density
Under concrete slab, foundations, and footings	95%*
Backfill at Structures	95%
Undercut Backfill	95%
General Fill adjacent to and outside of Buildings	93%
Structural Engineered Fill at Bldgs	95%
Embankments	95%
Pavement Areas (asphalt and concrete and brick)	95%
Impervious Barriers	95%
Trench Backfill Under Traffic Areas (Including sidewalks) Non-Traffic areas	 95% 90%
Other Landscaped Areas	90%
*100% for granular material if specified	

B. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

C. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

3.29 FIELD QUALITY CONTROL AND TESTING

A. Contractor shall provide free access to Work and shall provide assistance and cooperation with appointed testing firm during testing. Coordinate operations to allow ample time for the required sampling and testing.

B. Soil density and optimum moisture content tests for each source of <u>imported</u> material shall be conducted by the Contractor's independent, Architect/Engineer approved laboratory and shall be re-tested upon each significant change of material. Costs shall be included in the price bid.

C. Samples from each source of material shall be made available to the Architect/Engineer for approval and testing purposes one week prior to its use.

D. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

E. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during soils and granular material placement. Field density and moisture testing shall conform to the requirements of ASTM D1556 (sand core) or D2922 and ASTM D3017 (nuclear density). Soils shall be described in accordance with ASTM D2488, Visual-Manual Procedure.

F. The following tests **will** be performed:
1. Perform a laboratory maximum density test for each type of **on-site** soil proposed for use or encountered in the work. Determine optimum moisture content in accordance with ASTM D1557, Method C.

G. The following tests **may** be performed:
1. Perform a laboratory maximum density test for each type of Contractor imported soil or granular material proposed for use to verify Contractor submitted information. Determine optimum moisture content in accordance with ASTM D1557, Method C.

H. Architect/Engineer will designate the time, date, and exact location of all field compaction density tests. Field density tests may be ordered by the Architect/Engineer at his discretion and at a minimum in accordance with the following average frequencies per lift:
1. General: One test for each type of fill and at each change in material or supplier.
2. Backfill for Foundations, Retaining Walls and Utility Trenches: At least one test for each layer of compacted fill and base material at intervals of approximately 50 feet along structure walls (foundation or retaining) and utility trench backfill on alternating lifts.
3. Embankments, Pavement Areas (asphalt, concrete, brick): At least one test on each 2,000 sq. ft. or less of mass fill placed under roadways, pavements (asphalt, stone or concrete) and sidewalks but not less than three tests for each partial lift.
4. Under Structures, Foundations, Slabs, Retaining Walls and Footings: At least one test on each 2,000 sq. ft. or less of mass fill placed under structures, foundations, floor slabs, retaining walls and footings with at least three tests for each partial lift.
5. Under Building Pads: Perform at least one test of subgrade for every 2,000 sq. ft. of building pad, but in no case fewer than three tests of subgrade. In addition, for each layer of compacted fill or backfill, if any, perform one field test for every 1,000 sq. ft. of overlaying building slab, but in no case fewer than three tests per lift. Compaction tests for areas under building slabs shall be completed not more than 24-hours prior to placement of concrete.
6. Landscaped Areas: One test per 300 cubic yards of compacted fill or backfill but not less than two per lift.

I. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

J. Compacted soils not meeting compaction densities shall be re-excavated, re-compacted, and re-tested until all requirements are met. All costs of re-testing shall be borne by the Contractor.

K. Materials not meeting gradation requirements shall be removed from the project site and replaced with appropriate materials. All costs of re-testing shall be borne by the Contractor.

L. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
   1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
   2. Determine that fill material and maximum lift thickness comply with requirements.
   3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.

M. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by On-site Geotechnical Engineer.

3.30 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Remove waste materials, including unacceptable/unsuitable excavated material, trash, and debris, and legally dispose off-site.

3.31 MAINTENANCE AND PROTECTION OF WORK

A. Protecting Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Protect subgrades and foundation soils from freezing temperatures and frosts when atmospheric temperature is lower than 35 degrees F.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Owner’s Designated Representative; reshape and recompact.

C. Settling: Where settling is measurable or observable at excavated areas during construction, remove finished surface (pavement, lawn, or other finish areas), add backfill material, compact, and replace/reconstruct surface treatment.
   1. Restore appearance, quality, and condition of finished surface to match adjacent work, and eliminate evidence of restoration to greatest extent possible, at the Contractor's expense.

D. Any backfill or fill materials that settle and/or erode during the general project warranty period shall be repaired by the Contractor upon receipt of written notice from the Owner’s Designated Representative, at no expense to the Owner.
   1. Remove finished surface (pavement, lawn, or other finish areas), add backfill material, compact, and replace/reconstruct surface treatment.
   2. Restore appearance, quality, and condition of finished surface to match adjacent work, and eliminate evidence of restoration to greatest extent possible, at the Contractor's expense.

E. Replace or repair any pipe, structure, or other work, which has been displaced or damaged during construction and general project warranty period at no expense to Owner.

F. Repair to proper grade any settlement of slab, pavement, utility structure, lawn, etc. adversely affected by settlement within general project warranty period at no expense to Owner.

END OF SECTION

SECTION 321216 - ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Work of this Section includes, but is not limited to:
   1. Aggregates
   2. Hot Mix Asphalt Concrete
   3. Liquid Asphalts

B. Deliver all container materials in manufacturer's standard, unopened containers with labels legible and intact. Store and protect from damage, freezing, or sunlight and heat, if required of individual product.

C. Store all materials and other items where damage and/or contamination will not occur.

D. Related Sections:

   1. Division 31 Section **"Earth Moving"**

1.3 DEFINITIONS

A. Pavement Area: The full width of hard bituminous road, parking surfaces, and asphalt sidewalks as shown on the Drawings.

B. NYSDOT: New York State Department of Transportation

C. NYSS or NYSDOT Specification Section: New York State Department of Transportation Standard Specifications dated May 1, 2008 (and any subsequent revisions).

1.4 QUALITY ASSURANCE

A. Provide at least one person who shall be present at all times during the execution of this portion of the work, and who shall be thoroughly qualified and experienced in the placing of the type of pavements specified and who shall direct all work performed under this section.

B. Comply with the referenced portions of NYSS.

C. All testing shall be performed by an approved testing laboratory. The Architect/Engineer may use the testing laboratory for inspection services.

D. Use only the materials and job-mix formula approved by the Architect/Engineer. Failure to consistently meet the approved job-mix formula shall be sufficient cause for the Architect/Engineer to prohibit the use of the asphalt supplier.

E. All finished paved surfaces shall be smooth, even, and free from surface defects and irregularities. Edges shall be straight, and shall meet existing pavements smoothly. Pavement shall present a smooth, continuous, and workmanlike appearance, free from patchwork, rough edges, spalling areas, potholes, depressions, bumps, and other defects. The finished installation shall meet with the complete approval of the Architect/Engineer and Owner with respect to appearance as well as structural integrity and other criteria.

F. Bituminous materials shall not be placed on any soft grade, when the grade is wet, when the temperature of the surface on which the mixture is to be placed is below 45°F (below 50°F for 1-inch compacted thickness or less), above 95°F, or when other weather conditions would prevent proper handling or finishing of asphalt mixtures unless otherwise ordered or approved by the Architect/Engineer.

1.5 SOURCE QUALITY CONTROL

A. The asphalt plant shall be approved by the Architect/Engineer.

B. All materials and the asphalt plant will be subject to inspections and tests by the Architect/Engineer and by the approved testing laboratory.

C. Submit sieve analysis of each subbase material from each granular material source.

D. Submit mill analysis of each grade of asphalt from each material source.

1.6 JOB-MIX FORMULA

A. No paving shall commence until a job-mix formula for each asphalt material to be placed has been submitted to and approved by the Architect/Engineer. The required job-mix formula shall be prepared by an approved testing laboratory and shall comply with the NYSS. Provide all testing as required to clearly show that materials meet specification requirements.

B. If a previously established job-mix formula is proposed, certified copies of the mix formula and all test reports made within the last six months by a recognized testing laboratory may be submitted. If the formula and test results comply with these specifications and sufficient evidence of compliance is submitted and is acceptable to the Architect/Engineer, a new job-mix formula will not be required. If insufficient data exists, the Architect/Engineer may request additional testing, or he may require a new job-mix formula.

1.7 SUBMITTALS

A. Proposed job-mix formula and certified materials tests as required under Part 1 – Job Formula shall be submitted.

B. Name, address and telephone number of the asphalt plant proposed for use and a certification that the proposed source conforms to the requirements of these specifications shall be submitted.

C. Evidence shall be submitted indicating that all materials meet the necessary requirements as specified herein.

D. Source quality control information as required in Part 1- Source Quality Control.

E. Certified test reports on tests required under Part 3 of this specification.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Hauling equipment shall conform to NYSS. The Contractor is advised that length of haul, manner of haul, temperature of asphalt, and similar criteria, have a direct bearing on the quality and acceptability of the finished pavements. These other criteria shall be properly controlled such that the job mix of asphalt, when placed, is identical to that specified, approved, and as it left the asphalt plant. Segregation of aggregates, whether occasioned by hauling operations, improper mixing at the asphalt plant, or for other reasons, will result in rejection of the pavement. Clusters and pockets of aggregate in the finished pavement surface, with voids surrounding the aggregates, are unacceptable and will be rejected.

B. All asphalt job mixes shall be delivered to the site and incorporated into the work within the mixing and placing temperature ranges as listed in the NYSS.

C. Subbase granular materials shall be hauled, placed, and graded in a manner to assure good drainage, to preclude the inclusion of foreign matter and to preserve the gradation.

D. Deliver all container materials in manufacturer's standard, unopened containers with labels legible and intact. Store and protect from damage, freezing, or sunlight and heat, if required of individual product.

E. Store all materials and other items where damage and/or contamination will not occur.

1.9 JOB CONDITIONS

A. Asphalt top course shall be placed only during the periods of May 1st up to and including the third Saturday of October when the temperature and conditions are as specified in Part 1- Quality Assurance. Deviations from this time schedule shall be only as approved by the Architect/Engineer.

B. Asphalt concrete pavement shall be installed upon previous courses, which are clean, dry, and free from standing water, and only when weather conditions are suitable.

C. Defective Pavement: Portions of the completed pavement which are defective in finish, compaction or elevation, or that do not comply in all respects with the requirements of the contract documents, shall be taken up, removed and replaced with suitable material, and properly installed in accordance with the contract documents.

D. Environmental Conditions:
1. Prime and Tack Coats: Minimum surface temperature of 60 deg F.
2. Asphalt Binder Course: Minimum surface temperature of 45 deg F and rising at time of placement.
3. Asphalt Top Course: As indicated in Part 1 – Job Conditions and Quality Assurance

E. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 – PRODUCTS

2.1 STONE SUBBASE COURSE

A. The subbase course materials shall consist of granular materials as shown on the Contract Drawings and/or as specified in Division 31 Section "Earth Moving". Depth as shown on the Contract Drawings.

2.2 BITUMINOUS PAVEMENT

A. Bituminous pavement shall be constructed with approved materials as stipulated in NYSS, Section 400. Job-mix formulas shall be formulated and submitted by the Contractor within the general limits imposed by NYSS Section 402.

B. A binder course shall be placed at a thickness as to produce a required completed thickness when well compacted with a ten (10) ton roller. The material shall be installed at the required completed thickness as shown on the Contract Drawings.

C. A wearing course shall be constructed on top of the binder course and shall produce the required completed thickness when well compacted with a ten (10) ton roller. The material shall be NYSDOT Type 12.5 F2 Top Course HMA. Required completed thickness shall be as shown on the Contract Drawings.

D. Base course (where required) shall be placed at a thickness as to produce the required completed thickness when well compacted with a ten (10) ton roller. Base course shall be Type 37.5 F9 Base Course HMA, in accordance with NYSS Section 402. Required completed thickness shall be as shown on the Contract Drawings.

E. In milled areas, an Asphalt Truing and Leveling course shall be placed on top of the milled surface prior to overlay course. The material shall be NYSDOT Asphalt Truing and Leveling Course. Truing and Leveling Course will not be included in the measurement of completed asphalt

thickness.

F. Asphalt tack coat shall conform to NYSS material designation 702-90.

G. Bituminous sealer shall conform to NYSS material designations 702-05 or 702-3401.

H. Bituminous Joint and Crack Filler shall conform with requirements of NYSS material designations 702-0700

2.3 MIXES

A. All bituminous concrete shall be mixed at the approved asphalt mixing plant in accordance with NYSS.

2.4 PAVEMENT STABILIZATION GEOTEXTILE FABRIC

A. The pavement stabilization geotextile materials shall be in accordance with Division 31 Section "Earth Moving".

2.5 PAVEMENT MARKING PAINT

A. Pavement marking paints for roadway centerline, bus loop and crosswalks shall conform to standards for reflectorized roadway striping. Epoxy reflectorized pavement striping is not required. Markings shall be yellow or white as indicated on the drawings.

B. Glass beads for use in reflectorized pavement marking paints shall conform to NYS DOT Specification 727-05.

C. Pavement striping for parking and lettering shall conform to roadway striping except that no glass beads are required. Markings for lettering shall be white in color. Marking for parking shall be yellow in color.

PART 3 - EXECUTION

3.1 GENERAL

A. Prior to the work of this section, verify that all utility, piping and grading work is complete, tested and approved by the Architect/Engineer and to the point where pavement installation may be properly performed. Particular attention is given to items such as pipelines or conduits so as to avoid excavating pavements at a later date.

B. Joints, where required, due to the discontinuation of work, shall be well bonded and sealed in such a manner as to create an integral appearance. Joints in successive courses shall be offset a minimum of two (2) feet horizontally from the lower pavement course. Transverse and longitudinal joints shall be performed in accordance with NYSS Section 401. Care shall be taken by workmen at all times to avoid walking on freshly spread material.

C. Where, curbs, pavers, concrete sidewalk, manholes or other objects come in contact with the pavement, they shall receive a uniform coating of an asphalt tack coat. The asphalt coating shall be applied according to the manufacturer's recommendations but in no case shall it be applied above the elevation of the abutting asphalt materials.

D. All asphalt material shall be placed in a uniform layer by an approved bituminous paver. Hand placement may be permitted in small irregularly shaped areas, which are not accessible to a paver, only with prior Architect/Engineer approval.

E. Each days paving (base, binder or top) shall begin from a straight saw cut joint approved by the Architect/Engineer.

F. Joints at existing pavements shall be vertically sawcut. Apply tack coat on surfaces as shown on joint detail of Contract Drawings before beginning placement of new material. New material surfaces shall match existing surface.

G. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

H. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

I. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

J. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

K. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.2 SUBGRADE PREPARATION

A. Subgrade shall be prepared in accordance with Division 31 Section “Earth Moving”.

B. The Architect/Engineer may require a field demonstration of compaction equipment before approving subgrade. Rolling and compacting shall be done in the longitudinal direction of the traffic flow. If the moisture content of the soil is outside of the limits required to achieve the required compaction in accordance with Division 31 Section “Earth Moving”, the Architect/Engineer will require the addition of water or discing and re-grading so that the required degree of compaction shall be achieved. Obtain Architect/Engineer's approval of subgrade prior to placing subbase course or geotextile fabric (if fabric is required).

3.3 STABILIZATION FABRIC

A. Geotextile shall be installed in accordance with Division 31 Section "Earth Moving".

3.4 SUBBASE COURSE INSTALLATION

A. Subbase course shall be prepared in accordance with Division 31 Section "Earth Moving".

3.5 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.6 BASE COURSE INSTALLATION (if required)

A. Asphalt concrete base course, as required by the Contract Documents, shall be placed to thickness and limits as shown on the Contract Drawings and only upon an Architect/Engineer approved subbase grade.

B. Compact the base course as specified in NYSS Section 402. In areas where rollers are inaccessible, compaction shall be effected with hand tampers or gas-fired compactors weighing not less than 25 pounds and having a bearing area not greater than 48 square inches.

C. Care shall be taken when rolling adjacent to a curb, sidewalk, light pole or other structure. Damage to any structure shall be repaired or replaced by the Contractor as ordered by the Architect/Engineer at no additional cost to the Owner.

D. The surface shall be tested with a 16-foot straight edge and all variations exceeding 1/4 inch in height or depth shall be eliminated.

3.7 BINDER COURSE INSTALLATION

A. Asphalt binder shall be placed to the thickness and limits as shown on the Contract Drawings and only upon an Architect/Engineer approved subbase grade (where no base course) or approved base course.

B. The roadway or sidewalk base surface to be covered shall be free from holes, depressions, bumps, waves, and corrugations. Any unsuitable surface areas or where directed by the Architect/Engineer shall be repaired by replacement of the unstable materials or by patching with a material to produce a tight surface having the correct grade. The roadway surface shall be cleaned by the use of mechanical sweepers, hand brooms, or other effective means until the surfaces are free of all material, which might interfere with the bond between the overlay material and the existing surfaces. All cleaning equipment shall be approved by the Architect/Engineer prior to use. Cleaning shall continue until adequate cleaning results as determined by the Architect/Engineer.

Cleaning shall be done immediately prior to overlaying at no additional cost to the Owner.

C. Compact the binder course as specified in NYSS Section 402. In areas where rollers are inaccessible, compaction shall be effected with hand tampers or gas-fired compactors weighing not less than 25 pounds and having a bearing area not greater than 48 square inches.

D. Care shall be taken when rolling adjacent to a curb, sidewalk, light pole or other structure. Damage to any structure shall be repaired or replaced by the Contractor as ordered by the Architect/Engineer at no additional cost to the Owner.

E. The surface shall be tested with a 16-foot straight edge and all variations exceeding 1/4 inch in height or depth shall be eliminated.

3.8 TOP COURSE INSTALLATION

A. Asphalt top course shall be placed only during the periods indicated in Part 1 Job Conditions.

B. The roadway or sidewalk binder surface to be covered shall be free from holes, depressions, bumps, waves, and corrugations. Any unsuitable surface areas or where directed by the Architect/Engineer shall be repaired by replacement of the unstable materials or by patching with a material to produce a tight surface having the correct grade. The roadway surface shall be cleaned by the use of mechanical sweepers, hand brooms, or other effective means until the surfaces are free of all material, which might interfere with the bond between the overlay material and the existing surfaces. All cleaning equipment shall be approved by the Architect/Engineer prior to use. Cleaning shall continue until adequate cleaning results as determined by the Architect/Engineer. Cleaning shall be done immediately prior to overlaying at no additional cost to the Owner.

C. The Contractor shall coordinate the application of the upper courses for new and existing asphaltic pavements so that the finished surface of both top courses will be uniformly level. Any irregularities or depressions in the existing pavement shall be corrected by placing additional asphaltic concrete.

D. Roll the asphalt top course with a minimum ten ton roller, or as specified by the NYSS.

E. The finished pavement shall present a continuous and even appearance from edge of pavement to edge of pavement. The top course shall be blended in to meet existing pavements where applicable.

F. The surface shall be tested with a 16-foot straight edge and all variations exceeding 1/4 inch in height or depth shall be eliminated.

3.9 MANHOLE CASTINGS AND OTHER APPURTENANCES

A. Manhole frames and covers, valve boxes, cleanout covers, catch basin frames and grates and dry well frames and grates shall be set so that the finished asphalt top course is 1/4 inch above each. In no case shall these frames and covers, boxes or grates protrude above the finish pavement surface. Likewise these appurtenances shall not sit in depressions nor be paved over. Prior to completion of finished pavement, all castings and appurtenances shall be protected from damage by the Contractor.

3.10 PAVEMENT MARKINGS

A. The Contractor shall paint solid markings using two coats of paint in those areas indicated on the contract drawings and as, hereinafter, specified. Markings shall be painted immediately after all aspects of the paving operations have been completed and before dirt can accumulate on the pavement surface.

B. Protection: Install adequate barricades at points where trespassing can occur immediately after paving is completed so as to prevent vehicles or pedestrians from impeding the painting, operation.

C. Method: Carefully layout and define all painted markings on the surface of the pavement by means of chalk markings before painting, and accurately paint all markings within the limits and to the dimensions indicated on the contract drawings. All surfaces must be thoroughly cleaned before markings are painted.

All markings shall be clear and distinct with sharply defined edges. Apply two coats of paint. At least 24 hours shall elapse between the painting of the first and second coats.

D. Removal of Equipment: Upon completion of the painting operation and once the paint has dried, remove all barricades and other debris, which has resulted from this operation.

E. Cleanup: Remove all spilled paint, tracking marks and unauthorized markings.

3.11 WEATHER AND SEASONAL LIMITATIONS

A. Contractor shall schedule paving operations such that all paving necessary to provide safe and adequate maintenance and protection of traffic or for the protection of previously laid course is completed within the weather and seasonal limitation described previously.

B. Scheduling and sequencing of work to conform to seasonal limitations shall be reflected in the price bid.

C. If paving operations are not completed within the weather and seasonal limitations, all temporary materials and work needed (e.g. shimming of castings and protrusions, adequate drainage etc.) to provide acceptable ride-ability, and maintenance and protection of traffic shall be provided by the Contractor until paving operations can be completed at no additional cost to the Owner.

D. Base or binder course, placed by the Contractor, which will be permanently incorporated into the work and left open to traffic over the winter, shall be cleaned and tack coated in accordance with NYSS. Cleaning and tack coat shall be done immediately prior to overlaying at no additional cost to the Owner.

E. If the Contractor requests a waiver of the seasonal limitations and the Architect/Engineer determines it to be in the best interest of the Owner, the seasonal limitations may be waived for a limited period of time subject to temperature, time, weather and other conditions. Conditions of seasonal waiver shall include, but not be limited to, withholding of payment for work performed beyond the seasonal limitation date pending determination of the pavement condition and performance during the following spring; and, delaying start of one-year warranty period.

F. Contractor shall have no claim against the Owner for any costs attributable to disapproval of a waiver request. Architect/Engineer decision for approval or disapproval is final.

G. Any pavement damage which occurs as a result of Contractor either not protecting previously laid course or constructing any pavement course outside weather or seasonal limits whether a waiver was granted or not, shall be repaired or replaced as determined by the Architect/Engineer at no additional cost to the Owner. All repairs or replacements shall be completed to the satisfaction of the Architect/Engineer and in accordance with these specifications.

3.12 PATCHING

B. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate subbase course to form new subgrade.

C. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd. .

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

D. Patching: Partially fill excavated pavements with hot-mix asphalt binder mix and, while still hot, compact. Cover asphalt binder course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.13 WARRANTY

A. Settlement: Any settlement exceeding 1/8-inch in 10 feet horizontally or ¼-inch total depression, which occurs in any asphalt work within one year after final acceptance, shall be entirely removed and brought to proper grade and repaired, to the satisfaction of the Architect/Engineer.

B. If ponding or negative drainage patterns occur during within one year after final acceptance, the area shall be repaired to the satisfaction of the Architect/Engineer at no additional cost to the Owner.

END OF SECTION 321216

SECTION 329200 – TURF AND GRASSES

GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section describes the procedures for: Topsoil Spreading; Soil Preparation; Seeding; Mulches; Maintenance; and Warranty of lawns.

B. Lawn work includes, but is not limited to, the following:
1. Establishment of Athletic Field turf and grasses
2. Restoration and establishment of lawn areas.
3. Screening, placing and spreading topsoil.
4. Importing, placing and spreading topsoil.
5. Sod and Seed bed preparation.
6. Seeding and sodding athletic fields and lawns
7. Maintenance: watering, fertilizing, mowing, core aerating and weed control.

C. Related Sections:
1. Division 31 Section **"Earth Moving"**

1.3 QUALITY ASSURANCE

A. Contractor shall retain for inspection the following items:
1. Receipts for all fertilizer, topsoil amendments and grass seed.
2. Seed and fertilizer in unopened bags, bearing the analysis of the contents, and in sufficient quantities to meet the requirements of the project.

B. All work in conjunction with topsoil placement, seeding and establishing lawns and landscaping shall be performed under the direction of individuals experienced in the establishment of lawns and landscape plantings.

C. The Contractor is responsible for protecting the lawns and athletics fields until the areas have been turned over to the Owner. Any damage to the fields prior to the District taking ownership will be repaired and restored in accordance with the specifications by the Contractor.

1.4 BIDDER QUALIFICATIONS

A. Contractors submitting bids shall have, or include subcontractors that have, been actively and directly engaged in constructing natural athletic field systems and provide proof of ten (10) or more of such sports turf installations that have been in active use for three or more years.

In addition, the bidder shall be a member of the American Sports Builders Association or Sports Turf Manager Association. A Certified Sport Field Manager (CFB-N or CSFM) on staff for the construction of athletic fields.

1.5 WARRANTY

A. Provide a uniform stand of grass by watering, mowing, and maintaining lawn areas until final acceptance. Reseed seeded areas, which fail to provide a uniform stand of grass, with specified materials until all affected areas are accepted by the Architect/Engineer.

B. The Contractor shall employ hay or straw bale checks in all swales, at intervals not exceeding 150 lineal feet. Stake bales into grade and clean out all sediment after each storm. Reseed area disturbed by cleaning.

1.6 SUBMITTALS

A. Submit the following within 48 hours of bid opening, as requested:

1. Three (3) copies of most recent installation/reference list for all projects of similar scope to this project completed in the last three years.

2. Three (3) copies of the American Sports Builders Association or Sports Turf Manager Association certification.

B. Topographic Survey – Submit topographic survey (prepared and sealed by a licensed surveyor) to the Architect/ Engineer for review and approval of the completed fine-graded competition level soccer/lacrosse field and varsity baseball field following installation of underdrainage systems and prior to beginning any seeding operations or placement of the synthetic turf field. Maximum survey grid spacing shall be 40’x40’ or closer as needed to confirm grade meets contract documents

C. Product Data: For each type of product indicated.

D. Certification of grass seed.

E. Product certificates.

F. Planting Schedule: Indicating anticipated planting dates for each type of planting

1.7 DELIVERY, STORAGE AND HANDLING

A. Sod:
1. Cut, deliver and install sod within a 24-hour period. Sod cutting and shipping shall be coordinated with the sod installers.
2. Do not harvest or transport sod when moisture content may adversely affect sod survival.
3. Protect sod from sun, wind and dehydration prior to installation.
4. Do not tear, stretch or drop sod during handling and installation.

5. Store sod materials at site in an orderly manner at location(s) acceptable to the Architect.

B. Seed:
1. Packing and Shipping: Ship seed and associated materials with certificates of inspections required by governing authorities.
2. Do not make substitutions. If specified seed material is not obtainable, submit to the Architect proof of non-availability and a proposal for use of equivalent material with similar performance criteria as the originally specified seed material.
3. Store all seed in the site in a cool, dry place in a manner to prevent wetting and deterioration, as approved by the Architect. Replace any seed damaged during storage as directed by the Architect.
4. Deliver seed in supplier's unopened packages bearing labels showing the supplier's name and seed analysis by weight.

C. Fertilizer:
1. Deliver fertilizer in the manufacturer's standard sized bags showing the weight, analysis and manufacturer's name. Store all fertilizer under a waterproof cover in a dry place as approved by the Architect.

1.8 JOB CONDITIONS

A. Contractor shall coordinate scheduling of topsoil placement, preparation of topsoil for permanent seeding, and seeding to meet the seasonal time frames.

B. Topsoil placed outside the seasonal times frames shall be temporary seeded by the Contractor, cost to be included in the price bid.

C. The Contractor is responsible to provide mechanically screened topsoil; complete fine grading; maintain topsoil and finish grade; complete preparation of topsoil; complete seeding and necessary reseeding; restore areas if eroded, settled, or otherwise disturbed after fine grading; and, provide additional topsoil and seed and restore finish grade where washout or damage occurs before grass is established.

D. The Contractor is responsible for all erosion control measures. Contractor shall provide straw bales or stoned check dams in ditches or problem swales at intervals required to adequately slow water velocity and impede soil loss.

E. Contractor shall provide mulch for temporary or winter seed and for permanent seed.

F. Lawn Topsoil Limits: All ground area within the indicated contract limit lines, or any additional area which has been disturbed in any way by the construction operations, shall be topsoiled and fine graded by the Contractor for permanent lawn seeding, unless otherwise indicated on the drawings to be covered with trees, shrubs, structure(s), walks, roads, or other surfaced areas

G. Permanent seeding shall be placed only during the following periods as weather conditions permit:
1. Spring Seeding – Between April 1 (or thereafter when ground becomes workable) and June 1
2. Fall Seeding – Between August 15 and October 15

1.9 SEQUENCING AND SCHEDULING

A. Schedule: Prior to construction, provide a schedule which addresses the following lawn thresholds involving erosion control stabilization and competitive use of playfields:

1. Seeding and Sodding Installation: The Contractor may invoice for 50% of the approved schedule of value breakdown at the time of acceptable installation.

   a. Unless otherwise directed in writing by the Architect, seed and sod lawns from April 1 to May 15 and from August 15 to October 1. Seeding and sodding between May 16 and August 14 is not acceptable unless adequate water supply is available and applied to the turfgrass as required herein and approved by the Architect.

   b. Proceed with and complete seeding and sodding as rapidly as portions of the site become available, working within the seasonal limitations for each kind of landscape work required.

2. Substantial Completion: The Contractor may invoice for 25% of the approved schedule of value breakdown at the time of substantial completion as described in Part 3, “Standards for Substantial Completion of Lawns” of this specification section. At this time, the Architect may issue the Notice of Termination to satisfy the NYS DEC stabilization requirements. The date of substantial completion is anticipated approximately 60 days after the lawn installation presuming all Contractor maintenance operations have been vigorously performed.

3. Final Acceptance: The Contractor may invoice for the final 25% of the approved schedule of value breakdown at the time of final acceptance as described in Part 3, “Standards for Final Acceptance of Lawns” of this specification section. The date of the final acceptance is anticipated approximately 30 days after substantial completion presuming all Contractors maintenance operations have been vigorously performed.

4. Owner Maintenance: After final acceptance of the lawns, the Owner will maintain for 1 to 3 growing seasons to reach competitive maturity and beyond per ASTM F2060.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Approved and screened topsoil obtained from excavation and grading work may be used. If insufficient material (either quantity and/or quality) is available, it shall be imported. All topsoil shall be at depths indicated under Spreading Topsoil of this specification.

B. Texture and content of topsoil shall conform to the following:
   1. Soil and Texture Content:

a. Sandy loam topsoil, well drained homogenous texture and of uniform grade, without the admixture of subsoil material. Topsoil shall be entirely free of dense material, hardpan, clay, stones over 3/4" in diameter, sod, or any other objectionable foreign material, including but not limited to, glass, debris, toxins, hazardous wastes and chemicals (such as atrizene or muriatic acid within the past seven (7) years) that may be injurious to humans, animals and plant materials.

b. Organic Matter: Containing not less than 5% or more than 10% organic matter in that portion of a sample passing a 1/4" sieve when determined by the wet combustion method on a sample dried at 105 degrees F.

2. pH Value: Containing a pH value within range of 6.0 to 7.0 on that portion of the sample which passes a 1/4" sieve.
3. Sieve Analysis for general lawn work: Shall be screened or rock picked to meet the following gradation:

Sieve Designation	% Passing
3/4"	100
1/4"	97-100
No. 200	20-65 (of the 1/4" sieve)

4. Sieve Analysis for Athletic Field lawn work: Shall be mechanically screened by an onsite screening facility provided by the Contractor prior to placing and spreading. Athletic field topsoil shall meet the above sieve requirements.

C. Topsoil shall be natural, friable, fertile soil, characteristic of productive soil in the vicinity. The topsoil shall be screened and free of stones, clay lumps, roots and other foreign matter.

D. Store topsoil separately from all other excavated materials on-site and preserve for reuse or replace with imported topsoil meeting the requirements of Division 31 Section "Earth Moving".

E. Stocked or furnished topsoil shall be tested by an approved soil-testing laboratory for determination of correct lime fertilizer additives. Submit mechanical and chemical analysis of off-site topsoil to the Architect/Engineer for approval prior to delivery of topsoil to the site. If more than one source will be used, provide an analysis of each source.

F. Topsoil Source: Imported topsoil shall meet the requirements of Division 31 Section "Earth Moving". Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

2.2 SEED

A. Grade A quality, fresh and recleaned and proven to produce satisfactory growth in the locality of the project.

B. Seed Mix: Fresh, clean and from current season's crop, delivered in original packages, unopened, and bearing guaranteed analysis. Seed shall meet New York State standards of germination and

purity.

1. Composed of the following varieties, mixed to the specified proportions by weight, and tested to minimum percentages of purity and germination. Shall be free of: Poa Annua, bent grass, and noxious weed seed such as Canadian Thistle, Coarse Fescue, European Bindweed, Johnson Grass and leafy Spurge. The landscape contractor shall furnish to the Architect/Engineer a signed statement certifying that the seed furnished is from a lot that has been tested by a recognized laboratory. Seed which has become wet, moldy or in any other way damaged in transit or storage, will not be accepted.

2. Permanent Seed Species: Lawn Mix Rate: 5 to 6 pounds per 1,000 SF. Athletic Field Mix Rate: 3.5 - 4 lb per 1,000 SF. Provide certified (Blue Tag) seed of grass species and percentages as follows. Any substitutions must be approved by the designers.

LAWN & ATHLETIC FIELD MIX Common Names	Percent by Weight	Percent Purity	Percent Germination
3rd Millennium SRP Tall Fescue	20%	90%	87%
Rhambler SRP Tall Fescue	20%	90%	87%
Traverse SRP Tall Fescue	20%	90%	87%
Cochise IV Tall Fescue	20%	90%	87%
Amazing GS Perennial Ryegrass	10%	90%	87%
Brooklawn Kentucky Bluegrass	10%	90%	82%

C. Temporary Seed Species for Erosion Control:
   1. If spring, summer or early fall, seed with perennial ryegrass at 1 lb per 1,000 SF.
   2. If late fall or early winter, seed with Certified “Aroostook” winter rye (cereal rye) at 2.5 lbs. per 1,000 SF.

2.3 FERTILIZER

A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
   1. Composition: 10 percent nitrogen, 6 percent phosphorous, and 4 percent potassium, by weight

B. Cyanamide compounds and hydrated lime are not permitted in fertilizer mixtures.

C. Fertilizer is not required for temporary seed.

2.4 MULCH

A. Straw Mulch: Clean, mildew- and seed free oat or wheat straw well seasoned before baling, free from mature seed bearing stalks or roots of prohibited or noxious weeds.

B. Hydro Fiber Mulch: Shall be a wood fiber or wood fiber and cellulose mixture, providing the cellulose content does not exceed 20% by volume and is thoroughly mixed with wood fiber mulch. Apply liquid tackifier uniformly at the rate of 60 gallons per acre, to keep straw mulch in place.

Examples of acceptable mulch are:

1. Conweb Hydro-Mulch 2000.
2. Conweb Hydro-Mulch 2500.
3. Mat's Soil Guard.

2.4 WATER

A. Free of substance harmful to plant growth. Hoses, pumps, sprinklers or other methods of transportation furnished by Contractor.

2.6 SOD

A. The sod shall be machine cut at a uniform soil thickness of one half (1/2") inch, ± one eighth (1/8") inch, at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be five (5%) percent. Broken pads and torn or uneven ends will not be acceptable. Sod shall be grown on mineral soil for 18-24 months from time of original seeding.

B. Sod shall be nursery grown and cultivated from certified seed and consisting of 95% minimum, live, vigorous plants of the following blue grasses and percentages. Sod shall contain no traces of annual blue grass, creeping bent, quack grass, nut grass, or insect pests.

C. Sod Individual pieces of sod shall be cut to the suppliers' standard width and length. Sod grass mix shall consist of:

27% Regenerate Tall Fescue
23% Reflection Tall Fescue
23% PST-5BGR Tall Fescue
11% Navigator II Creeping Red Fescue
9% SPF 30 Kentucky Bluegrass
9% Shannon Kentucky Bluegrass

Any substitutions should be approved by the designers.

An acceptable substitution for sod grass mix is:

30% Rhambler SRP Tall Fescue
25% Cochise IV Tall Fescue
25% Monet Tall Fescue
10% Brooklawn Kentucky Bluegrass
10% Washington Kentucky Bluegrass

D. Sod shall be furnished and installed in rectangular sod strips measuring twelve (12") inches or sixteen (16") inches in width and from four feet to six feet (4'-6') in length, stored in rolls with the grass top side inverted so that the topsoil is to the exterior. Big roll sod will also be accepted.

E. Sod shall be well rooted, healthy, and free of diseases, nematodes, poa annua, insects, nut grass and weeds. Sod will be considered unacceptable if it contains any of the following weeds: common bermudagrass, quackgrass, johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, poa annua and

bromegrass.

F. Sod shall be harvested, delivered and installed within a period of twenty four (24) hours. Soil on sod pads shall be kept moist at all times

2.7 SEEDING ACCESSORIES

A. Weed Killer

If necessary in the opinion of the Architect/Engineer, an application of weed killer may be required prior to final acceptance. A herbicide labeled and registered in New York State for control of the target weed(s) shall be applied by a certified pesticide applicator in conformance with NY State law.

B. Mulch Tackifier

Apply liquid tackifier uniformly at the rate of 60 gallons per acre, if needed, to keep straw mulch in place.

C. Ground Limestone

Shall be applied at a rate sufficient to adjust pH to between 6.0 and 7.0 as determined by the pH testing laboratory. (Laboratory costs paid by the Contractor.) Rate of lime application not to exceed 50 pounds per 1000 sf.

1. Calcic or dolomitic ground limestone.
2. Shall contain not less than 85% of total carbonates.
3. Magnesium oxide - 10% minimum content for dolomitic and high magnesium limes.
4. Sieve Analysis - at least 50% will pass through a No. 100 mesh sieve and 90% will pass through a No. 20 mesh sieve.
5. Coarser material may be used providing the rates of application are increased as approved by the Architect/Engineer.

D. Packaging: New, clean, sealed and properly labeled bags not exceeding 100 pounds each.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that all underground and above ground work has been completed to the point where topsoiling, fertilizing, seeding and mulching operations may properly commence without unnecessary disturbances at a later date.

3.2 SPREADING TOPSOIL

A. In lawn areas to be seeded, provide topsoil to a minimum compacted thickness of 4-inches. In

athletic field areas to be seeded, provide topsoil to a minimum compacted thickness of 6-inches In the event that insufficient topsoil is not available from stripping the area to be excavated, the Contractor shall import enough additional topsoil to make up the deficit at no additional cost to the Owner.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4-inches to facilitate bonding of the topsoil to the subgrade. Use discs, spike-toothed harrows or other approved means. Clean surface of subgrade of all stones larger than 1-inch in any dimension and all sticks, roots, rubbish, and other extraneous matter and legally dispose of them offsite.

1. Thoroughly blend planting soil mix off-site before spreading, or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
2. Spread planting soil mix, evenly on the approved prepared subgrade, to a depth of 4 inches on lawns and 6-inches on athletic fields but not less than required to meet finish grades after light rolling and natural settlement.

C. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:

1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
    a. Apply slow release fertilizer directly to surface soil before loosening at a rate equal to 1.0 pound of actual nitrogen per 1,000 square feet (430 pounds of fertilizer per acre).
3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
4. Legally dispose of waste material, including grass, vegetation, and turf, offsite.

D. Carry out spreading so that turfing operations can proceed with a minimum of soil preparation or tilling. Do not spread topsoil when the ground is frozen, excessively wet or otherwise in a condition detrimental to the work in conformance with all legal requirements and in a manner acceptable to the Architect/Engineer.

E. Finished Grades: Shall be understood to be final spot grades and contours indicated on the contract drawings. Where final spot grades or new contours are not indicated, finished grades shall be uniformly level or sloping between points for which elevations are given or contours are shown or shall be graded to the elevations which previously existed. However, final surface grades shall afford positive drainage of all areas at all times.

F. Tops and Bottoms of All Slopes: Round tops and bottoms of slopes and drainage swales. Adjust and warp slopes, at intersections of cuts and fills, to flow into each other or into the existing natural ground surface without noticeable break. Cuts and fills shall have a maximum slope of 3-foot horizontally to 1-foot vertically, unless otherwise shown on the contract drawings.

G. Fine Grading Lawn Areas: Bring the grade of areas to receive lawns to a uniform, level slope, as determined by the use of surveying instruments, by discing, harrowing and other methods approved by the Architect/Engineer. Grade planting areas to a smooth, uniform surface plane with loose,

uniformly fine texture.

When establishing finish grades, remove and dispose of all clods, hard lumps, stones and rocks, roots, litter and other foreign matter not passing through the teeth of a hand iron rake. Tractor drawn raking equipment that compacts lawn areas will not be allowed. Dispose of all such materials off-site.

H. Remove all topsoil spilled on highways, shoulders, sidewalks, driveways and other surfaces for which topsoil is not specified or required.

I. Settlement: Maintain ground surfaces to the finish grades shown on the contract drawings, and deposit whatever additional topsoil that may be required to correct any settlement or erosion that occurs prior to the date of issuance of the Certificate of Final Acceptance. The surface upon which additional topsoil is to be deposited shall be raked or otherwise satisfactorily prepared to ensure a proper bond. Fill hollows that develop from settling, to the finished elevations, with approved topsoil. Finished lawn areas shall be left sufficiently high to meet all paved areas and catch basins after settlement.

3.3 PREPARATION OF TOPSOIL

A. For preparation and amending topsoil in athletic field areas, see Athletic Field Preparation Specification.

B. If the following conditions exist at the time of sowing seed, placing fertilizer and lime, this paragraph may be omitted:
1. Topsoil has been spread and raked clean within the past 10 days and is shaped to the required grade.
2. Topsoil was spread more than 10 days ago but the top 3-inches is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter and shaped to the required grade.

C. If any of the above conditions do not exist, then prepare the topsoil in accordance with the following paragraphs.

D. Repair all eroded and damaged surfaces, cut or otherwise remove all weeds and grass and scarify or otherwise loosen topsoil to a depth of not less than 3 inches.

E. Break up large, stiff clods, and hard lumps, and rake off all stones and rocks larger than 1-inch in size, roots, litter, foreign matter, poisonous materials, and other materials, which may be detrimental to the work. Dispose of all such materials off-site in conformance with all legal requirements and in a manner acceptable to the Architect/Engineer.

F. Liming (used when required to adjust pH of topsoil):
1. Apply separately at a rate sufficient to bring the pH of the topsoil between 6.0 and 7.0 as determined by the pH-testing lab, prior to fertilizing, seeding and sodding. Lime may be applied dry by spreader or as an aqueous solution by spraying. Rate of lime application not to exceed 50 lbs per 1000 sf.
2. After application, work lime into the top 3-inches of topsoil and redress surface to a smooth

finish.

3.4 SEEDING LAWNS AREAS

A. Seeding Limits: All ground area within the indicated contract limit lines, or any additional area which has been disturbed in any way by the construction operations, shall be fine graded and planted with lawn seed mix unless otherwise indicated on the drawings to be covered with trees, shrubs, structure(s), walks, roads, or other surfaced areas.

B. Responsibility: The Contractor shall utilize all such measures as may be necessary, including, but not limited to, protective fencing, sod, or erosion control netting to produce a finished continuous blanket of turf over all areas designated to receive lawns.

C. Fertilizer (Dry)
1. Apply fertilizer to indicated lawn areas at a rate equal to 1.0 pound of actual nitrogen per 1,000 square feet (430 pounds of fertilizer per acre).
2. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated into soil to a depth of 3-inches, by discing or other approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.
3. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed, after fine grading and prior to seeding.

D. Seeding Operations (Lawns Only)
1. Dry Seeding
    a. Seed immediately after preparation of bed and meeting seasonal time frames.
    b. Seed indicated areas, within contract limits and areas adjoining contract limits, disturbed as a result of construction operations.
    c. Perform seeding operations when the soil is dry and when winds do not exceed 5 miles per hour velocity.
    d. Apply seed with a rotary or drop type distributor. Install seed evenly by sowing equal quantities in two directions, at right angles to each other.
    e. Sow grass seed at rate recommended by seed vendor and approved by the Architect/Engineer. The total rate of seed application shall be based upon "new lawn" requirements and shall not be less than 5 pounds per 1,000 square feet.
    f. After seeding, lightly rake or drag surface of soil to incorporate seed into top 1/8-inch of soil. Roll with light lawn roller.

E. Fertilizing and Seeding (Wet-Hydro Seeding)
1. Hydro seeding is not allowed on Athletic Field Lawns.
2. Contractor may apply seed and fertilizer by spraying them in the form of an aqueous mixture. Water used shall be fresh water free from injurious chemicals and other toxic substances harmful to plant life.
3. Equipment shall be of a type made specifically for this purpose and capable of maintaining a uniform mixture, even when not spraying. Use a hydromulcher (sprayer).
4. Apply mixture(s) at the following rates. Mix in accordance with manufacturer's recommendations. Protect all paving, buildings, plantings and all nonseeded areas from over spraying of hydroseed mixture. Contractor shall clean up unwanted deposits at his expense.

LAWN SEED

a. Grass Seed: 200 to 250 pounds/acre.
b. Fertilizer: At rate necessary to provide 1lb actual nitrogen per 1,000 SF.
c. Tackifier: 60 gallons/acre.
d. Wood Cellulose Fiber Mulch: 2,000 pounds/acre.

5. Roll seeded surfaces if mulch is not used and only after soil has dried. Roll with light lawn roller.
6. A non-harmful color additive, which colors the hydroseed mixture green, shall be added to the mixture to allow visual metering of its application. The hydroseed mixture shall be sprayed upgrade and uniformly on the surface of the soil to form an absorbent cover, allowing percolation of water to the underlying soil.

F. Mulching of Lawn Areas (Lawns Only)
1. Place straw mulch on seeded areas within 24 hours after seeding.
2. Place straw mulch uniformly, in a continuous blanket, at the rate of 2-1/2 tons per acre or two 50-pound bales per 1,000 square feet of area. A mechanical blower may be used for straw mulch application, when acceptable to the Architect/Engineer.
3. Anchor straw mulch with liquid tackifier, applied uniformly at a rate of 60 gallons per acre.
4. Protect all paving, buildings, plantings and all nonseeded areas from liquid tackifier over-spray.
5. Provide straw bales checking in ditches or problem swales at intervals required to adequately slow water velocity and impede soil loss.

3.5 SOD INSTALLATION

A. Care shall be taken to eliminate depressions or air pockets by rolling or tamping base before installation. The soil shall be moistened prior to laying the sod.

B. The sod shall be laid smoothly, edge to edge, and where continuous or solid sodding is called for on the plans sod shall be laid with the longest dimension parallel to the contours. Vertical joints between sods shall be staggered. Immediately after laying, sod shall be pressed firmly into contact with the sod bed by light rolling, or by other approved methods so as to eliminate all air pockets, provide true and even surfaces, insure knitting and protect all exposed sod edges, but without displacement of the sod or deformation of the sod surface. Sod shall be laid with all joints compressed and at no time will shrinkage leave greater than 1/8” gap.

C. Sod may be placed from April 15th to November 1st as long as the ground is not frozen.

D. Sod shall be harvested, delivered and transplanted within a period of twenty four (24) hours.

E. Sod shall be watered immediately during and after installation to prevent drying. It shall then be thoroughly irrigated to a depth sufficient that the underside of the new sod pad, and soil immediately below the pad, is thoroughly wet.

F. Any sod on slopes 4 to 1 or greater will be securely fastened to the base by wooden pegs or an acceptable substitute.

G. 24 hours after installation, the sod shall be hand rolled by approved methods.

H. Repair joint separations. Dead or washed out sod will be replaced with sod similar to the original installation. The turf bed will also be repaired as is necessary before replacement sod is laid.

3.6 MAINTENANCE FOR PERMANENT LAWN AREAS

A. Maintenance by Contractor begins as soon as lawns are sodded or seeded. Protect lawns from drought, washout and wind erosion. In general, maintain new installed lawn areas, including watering, fertilizing, core aerating, spot weeding, overseeding, mowing applications of herbacides, fungicides, insecticides, and re-sodding until a full, uniform, healthy, vigorous stand of grass free of weed, undesirable grass species, disease, and insects is achieved and accepted by the Architect. Specifically:

1. Watering Seeded Lawns:
    a. First Week: In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week to maintain moist soil to promptly germinate the lawn seed, preventing it from drying out, and keeping it in a healthy, growing condition until final acceptance. Lawn areas shall receive a minimum of (1") of water per week, by natural rainfall, irrigation or a combination of both. Water daily until 2nd mowing (just enough water to keep the top1/2" of soil moist, 1 time daily).
2. Watering Sodded Lawns:
    a. First Week: Soil on sod pads shall be kept moist. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in insufficient quantities to maintain moist soil to a depth of at least (4") inches.
3. Second and Subsequent Weeks: Contractor shall provide water to the lawns as required to maintain adequate moisture, in the upper four (4") inches of soil, necessary for the promotion of deep root growth until final acceptance. After 2nd mowing, water two (2) times weekly until thoroughly established.
4. Protect: Protect lawn areas against trespass, vandalism and routine pedestrian traffic and Owner maintenance traffic by temporary fencing or other means.
5. Repair: Repair, rework, resod, and overseed (as originally specified for that area) areas that have washed out, eroded, do not germinate and are vandalized or otherwise damaged. Overseeding rates are to be adjusted to 6lbs. of seed per 1,000 s.f.
6. Mow: Initial mowing shall begin when the blade height reaches 2" and the soil will bear the weight of the lawn mower. Use mowers with low impact tires. For the first 3 mowings cut the grass blades to 1.5 inches. After that mow the grass when it reaches a height of 3.5" to a height of about 2.5". Never remove more than 1/3 of the grass blade at any one mowing. A minimum of eight (8) to ten (10) mowings are required (approximately once per week after the initial germination period to final acceptance). Notify the Architect of dates in wiring as mowing is performed. Excess clippings shall be carefully raked so as not to remove healthy grasses, and removed.
7. Core aerating on Lawn Type 3 and 4 Only: Between mowings five (5) and six (6), core aerate lawns about three (3") inches on center minimum three (3") inches deep to ensure

aggressive root growth. This will required multiple passes at different directions to achieve 16 to 20 holes ¾" to 1" diameter per square foot. Sweep scattered plugs off paved areas onto adjacent lawn areas. Pulverize plugs during subsequent mowing operations. Provide additional core aerating as directed by the Architect to expedite the lawn maturation process. Moisten field by thoroughly watering the topsoil profile, several days in advance of coring to facilitate proper penetration of the topsoil.

8. Fertilizer: Immediately after core aerating, apply subsequent fertilizer at the rate of 1.5-2 lbs./1,000 sf. Provide additional fertilizer after the 10th mowing as directed by the Architect to expedite the lawn maturation process.

9. Weed Control: When infestation of weeds or crabgrass develops, treat infestation by hand weeding or herbicides control appropriate to the area. Furnish and install weed chemical control as recommended by manufacturer. Herbicides controls must be acceptable to the Owner. Obtain and pay for permits. Use as directed by the manufacturer and applicable laws, codes, ordinances and regulatory requirements. Under NO circumstances is it acceptable to seed or overseed over Nutsedge, Crabgrass or other grassy/broadleaf weeds.

B. Maintenance by the Contractor continues through the certificate of substantial completion final acceptance by the Architect as described below. Maintenance by Owner begins after final acceptance of the lawn.

3.7 MAINTENANCE FOR TEMPORARY LAWN AREAS

A. Contractor shall roll, regrade, re-topsoil and reseed, washed out, eroded, settled or damaged areas as required.

B. Contractor shall establish and maintain temporary lawn by seeding, watering, reseeding, and other operations.

C. Mowing of temporary seeded areas for erosion control is not required.

3.8 SUBSTANTIAL COMPLETION

A. Review to determine substantial completion of lawns will be made by the Architect, upon request. Provide notification at least five (5) working days before requested review date.

B. Lawn areas will be substantially complete provided requirements, including maintenance, have been complied with. A healthy, vigorous, uniform, partially mature stand of lawn is established free of weeds, undesirable grass species, disease, and insects. With proper watering and maintenance as indicated herein, this should culminate after an approximate 60-72 day period for initial germination with average temperatures above 40°F. Grass roots shall have matured to a minimum of 1 1/2" depth as determined by the Architect when core samples are taken.

C. Lawn areas shall not have more than 10% dead/bare spots.

D. Contractor shall provide a written cop of all maintenance activities performed up to this date.

E. The Architect will prepare a written punch list of items which need correction prior to final acceptance.

3.9 FINAL ACCEPTANCE

A. Review to determine final acceptance of lawns will be made by Architect, upon request. Provide notification at least five (5) working days before requested review date.

B. Lawn areas will be acceptable provided requirements, including maintenance, have been complied with. A healthy, vigorous, uniform, full stand of lawn is established free of weeds, undesirable grass species, disease, and insects. Grass roots shall have matured to a minimum of 2" depth as determined by the Architect when core samples are taken.

C. Any lawn which contains disease, more than 1% dead/bare spots, or any dead/bare area greater than one (1) square foot shall be rejected and the unacceptable area(s) repaired as originally specified at no additional cost to the Owner.

D. In the vent the Contractor fails to complete the punch list items within a 30 day period with average temperatures of 40°F after the time of Substantial Completion, the Contractor shall be liable to the Owner for any additional costs including those charged by the Architect.

E. Contractor shall provide a written cop of all maintenance activities performed during the contract up to final acceptance of lawns.

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END OF SECTION 329200