THIS COPY IS FOR INFORMATION ONLY. YOU MUST PURCHASE THE PROPOSAL IN ORDER TO SUBMIT A BID.

STATE OF DELAWARE

DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T200751201.01

NORTHEAST CORRIDOR IMPROVEMENTS, YARD TO RAGAN - CIVIL, STRUCTURE

WILMINGTON TO NEWARK COMMUTER RAIL IMPROVEMENTS

Advertisement date: August 22, 2011

FTA No. DE-03-0016, DE-05- 0014, FHWA No. HPP-2005(028)
CFDA NO. 20.500

Prospective Bidders Are Advised That There Will Be a **Mandatory Pre-bid Meeting** and Site Visit for this Contract on August 31, 2011 at 10:30 A.m. in the Delaware Transit Corporation, Beech Street Offices, 119 Lower Beech Street, Suite 100, Wilmington, De 19805.

Included in the Pre-bid Meeting Will Be a Civil Right Component Intended to Assist Planholders in Identifying and Engaging Certified DBE Firms to Meet the Established DBE Goal of 14%.

Everyone Attending the Site Visit Will Need to Bring Their Own Safety Glasses, Work Boots, and an Orange Reflective Vest. We Do Not Supply Safety Gear. Photographs Will Be Allowed. Amtrak Will Supply RWP Protection During the Visit.

Completion Date 391 Working Days (available days)

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
DELAWARE DEPARTMENT OF TRANSPORTATION
AUGUST 2001

Bids will be received in the Bidder's Room, Transportation Administration Center, 800 Bay Road, Dover, Delaware until 2:00 P.M. local time September 27, 2011

GENERAL DESCRIPTION

Contract No.T200751201.01

FTA No. DE-03-0016, DE-05- 0014 FHWA No. HPP-2005(028) CFDA NO. 20.500
NORTHEAST CORRIDOR IMPROVEMENTS, YARD TO RAGAN - CIVIL, STRUCTURE
WILMINGTON TO NEWARK COMMUTER RAIL IMPROVEMENTS

LOCATION

These improvements are located in NEW CASTLE County more specifically shown on the Location Map(s) of the enclosed Plans.

DESCRIPTION

The improvements consist of furnishing all materials and labor for constructing trackbed and placing ballast stone along Amtrak's Northeast Corridor (NEC), reconstructing an existing railroad bridge and abutments, installing scour protection beneath railroad bridge, constructing retaining walls, constructing ditches, and other incidental construction in accordance with the location, notes and details shown on the plans and as directed by the Engineer.

COMPLETION DATE

All work on this contract must be complete within 391 Working Days (available days) .

ELECTRONIC BIDDING

This project incorporates the electronic bidding system Expedite 5.2b. Bidders wishing to use the electronic bidding option will find a bid file on the CD. The installation software may be downloaded by clicking here.

PROSPECTIVE BIDDERS NOTES:

1. No retainage will be withheld on this contract.

2. The Department has adopted an External Complaint Procedure. The procedure can be viewed on our website at; www.deldot.gov/information/business/, or you may request a copy by calling (302) 760-2555.

3. Please note the Special Provision titled **Changes to Project Documents During Advertisement**. The Department is using an alternative method of providing bid documents for this contract.

4. SUBMISSION REMINDER**:**
   a. Copy(ies) of the American Traffic Safety Services Association (ATSSA) Certification(s) when listed in the applicable plan notes.

   b. Standard Specification Section 110.08 Site Reviewer requires that the name and DNREC certification number of each Site Reviewer if required shall be submitted to the Department. The level of certification and number required are listed in the applicable plan notes.

   Note: Items a. and b. above require copies of the current certifications for those individuals proposed for use on this Contract.

   Failure of the apparent low bidder to present copies of the required certifications within ten (10) calendar days after the bid opening shall create a non-rebuttable presumption that the bid is non-responsive.

5. The following documentation **must be submitted with the Bid**. If this documentation is not submitted with the bid, the bid will be considered Non-responsive.

   Proof is required that the Prime Contractor, if he/she is performing the cleaning/painting operation, and any cleaning/painting Subcontractors are certified by the Steel Structures Painting Council (SSPC) Painting Contractor Certification Program (PCCP) QP-1 and QP-2. Such certification shall be for the duration of the project.

6. MODIFIED SPECIFICATIONS. The following 'Standard Specifications for Bridge and Road Design, August 2001' specifications are modified for Contract T200751201.01 as follows:

   Subsection 106.09 Disposal of Unacceptable Materials

   Add the following:

   The Contractor shall conform to DNREC requirements regarding documentation of waste materials removed by the excavation operations and shall provide the Engineer with copies of all documentation.

   At a minimum, documentation shall be provided regarding:

   1. Street address and property identification number of each disposal site.

   2. Name, address, and telephone number for property owners of each site.

   3. Dates material disposed of at each site, quantity / number of truck loads, and location on the project where material originated (approximate baseline station limits)

   Subsection 111.01 Permit Required

   Add paragraph (A) "Objectives", as follows:

   A. Objectives

      1. Work consists of all necessary provisions for designing, furnishing, installing, maintaining, operating and removing temporary dewatering systems as required to lower and control water levels and hydrostatic pressures during construction; disposing of pumped water; constructing, maintaining, observing and, except where indicated or required to remain in place, removing of observation wells; and instrumentation for control of the system.

      2. Dewatering includes lowering the water table and intersecting seepage which would otherwise emerge from the slopes or bottom of the excavation; increasing the stability of excavated slopes; preventing loss of material from beneath the slopes or bottom of the excavation; reducing lateral loads on sheeting and bracing; improving the excavation and hauling characteristics of sandy soil; and preventing rupture or heaving of the bottom of an excavation.

      3. Instrumentation for control of the dewatering system includes furnishing, installing and operating piezometers as well as reading and logging of water levels in the observation wells.

   Subsection 111.08 Submittals

   Add the following:

   Submit the following for the approval by the Engineer, prior to installation of the system.

A. The proposed type of dewatering system, including relief of hydrostatic head and maintenance of the excavation in a dewatered and in a hydrostatically relieve condition.

B. Arrangement, location and depths of the components of the system.

C. A complete description of equipment to be used, with installation, operation, and maintenance procedures.

D. Standby equipment and power supply.

E. Location and size of berms, dikes, observation wells, sumps and discharge lines, including their relation to water disposal ditches.

F. Types and sizes of filters.

G. Location, types and depths of well points and piezometers.

H. Design calculations prepared by an engineer, licensed in the State of Delaware, demonstrating adequacy of the selected system and equipment.

Subsection 111.09 Dewatering

Add the following:

A. Accomplish dewatering in accordance with approved working drawings. Keep the Engineer advised of any changes made to accommodate field conditions and, on completion of the dewatering system installation, revise and resubmit working drawings.

B. Organize dewatering operations to lower the groundwater level in excavations as required for prosecution of the work, and to provide a stable, dry subgrade for the prosecution of subsequent operations.

C. Maintain the water level at such lower elevations until no danger to the structure can occur because of buildup of excessive hydrostatic pressure, and in any event maintain the water level a minimum of two feet below the subgrade, unless otherwise permitted by the Engineer.

D. If approved by the Engineer, the extent of dewatering may be reduced, for units designed to withstand uplift pressure, to maintain the water level a minimum of five feet below the prevailing level of backfill as it is being placed, provided such water level does not result in uplift pressures in excess of 80 percent of the downward pressure produced by the weight of the structure and backfill in place.

E. The Contractor shall construct temporary dikes that will surround open excavations to prevent inundation during precipitation events.

Subsection 111.15 Quality Assurance

Add Subsection 111.15 "Quality Assurance", as follows:

A. Codes, Regulations, Reference Standards and Specifications

1. Codes and regulations of the jurisdictional authorities.

2. ASTM: C33, D1785, D2466, and D2564.

3. Section 110: Erosion, Sediment Control and Water Pollution.

B. Design a dewatering system which will:

1. Effectively reduce the hydrostatic pressure and lower the groundwater levels below excavation.

2. Develop a substantially dry and stable subgrade for the prosecution of subsequent operations;

3. Not result in damage to adjacent properties, tracks, structures, utilities and other work (any damage shall be the responsibility of the Contractor and the Contractor shall pay for all repairs);

4. Assure that after initial pumping, no soil particles will be present in the discharge in accordance with state and local regulations.

C. Methods may include trenching and sump pumping, single or multiple stage well point systems, eductor and ejector type systems, deep wells, stream diversion, and combinations thereof. Discharge from dewatering operation shall be filtered through approved sediment and discharge control devices into the existing storm drainage system.

D. Locate dewatering facilities only where they will not interfere with utilities and construction work to be done by others.

E. Modify dewatering procedures, which cause, or threaten to cause, damage to new or existing facilities, so as to prevent further damage. The Contractor is responsible for determining the modifications to be made, which shall be at no additional expense to the County.

Subsection 202.05 Embankment

In paragraph (c) "Placement", modify the first sentence as follows:

Material shall be placed in successive layers, and each layer shall be placed in a level, uniform cross-section, not to exceed 4" in depth if hand tamped or 8" in depth, loose measurement, unless otherwise approved by the Engineer.

In paragraph (e) "Compaction Procedure", modify the first and third paragraphs as follows:

Compaction or rolling shall start at the edges, progress toward the center of the embankment, and shall continue until each layer is thoroughly and uniformly compacted to the full width of the embankment and to 98% or more of the maximum density of the same soils as determined by AASHTO T99 Method C, Modified.

In paragraph (e) "Compaction Procedure", modify the third paragraph as follows:

All areas of sharp depressions, trench backfills, and around culverts, bridges, and walls, inaccessible to the specified methods of compaction, shall be built in continuous horizontal layers not more than 4" in depth if hand tamped or 8" in depth, loose measurement, and shall be thoroughly tamped and compacted to the specified density.

Subsection 202.10 Method of Measurement

Add the following:

Material removed as part of Bid Item 2025XX "Grading and Reshaping Existing Subgrade" shall be excluded from the quantities measured under Bid Item 202000 "Excavation and Embankment".

Subsection 207.04 Cofferdams

Modify the third paragraph as follows:

All temporary support of excavation (SOE) systems that are within 1(H):1(V) slope from the edge of existing ties shall remain in place after the completion of construction of the permanent structure.

Subsection 207.05 Backfilling

Modify the third and fourth sentences in the first paragraph as follows:

Backfill material shall have a maximum particle size of ½ the lift thickness. Backfill material shall be compacted to 98% or more of the maximum density according to the requirements of Subsection 202.05 (f). When backfilling next to bridges, culverts, or other structures, no heavy mechanical compacting equipment will be permitted over the structure until a minimum of 18" of cover has been placed. Manual portable equipment will be permitted over the structure with a minimum of 4" of backfill cover.

Subsection 208.04 Backfilling

Modify the second paragraph as follows:

For pipe trenches or utility trenches below the rail beds, roadway or shoulders, trenches shall be backfilled with material conforming to the requirements of Subsection 209.04, Borrow Type C. If the existing material meets these requirement, it shall be used for pipe or utility backfill. For these areas, backfill material shall be compacted to 98% or more of maximum density according to the requirements of Subsection 202.05 (f).

Subsection 209.02 General Requirements

Modify (1) as follows:

Material with a maximum dry weight less than 105lb/ft.

7. All information provided on the Cover Page of this Document is included as 'General Description'.

STATE OF DELAWARE
CONSTRUCTION ITEMS UNITS OF MEASURE

English Code	English Description	Multiply By	Metric Code	Metric Description	Suggested CEC Metric Code
ACRE	Acre	0.4047	ha	Hectare	HECTARE
BAG	Bag	N/A	Bag	Bag	BAG
C.F.	Cubic Foot	0.02832	m^3	Cubic Meter	M3
C.Y.	Cubic Yard	0.7646	m^3	Cubic Meter	M3
EA-DY	Each Day	N/A	EA-DY	Each Day	EA-DY
EA-MO	Each Month	N/A	EA-MO	Each Month	EA-MO
EA/NT	Each Night	N/A	EA-NT	Each Night	EA/NT
EACH	Each	N/A	EA	Each	EACH
GAL	Gallon	3.785	L	Liter	L
HOUR	Hour	N/A	h	Hour	HOUR
INCH	Inch	25.4	mm	Millimeter	MM
L.F.	Linear Foot	0.3048	m	Linear Meter	L.M.
L.S.	Lump Sum	N/A	L.S.	Lump Sum	L.S.
LA-MI	Lane Mile	1.609	LA-km	Lane-Kilometer	LA-KM
LB	Pound	0.4536	kg	Kilogram	KG
MFBM	Thousand Feet of Board Measure	2.3597	m^3	Cubic Meter	M3
MGAL	Thousand Gallons	3.785	kL	Kiloliter	KL
MILE	Mile	1.609	km	Kilometer	KM
S.F.	Square Foot	0.0929	m^2	Square Meter	M2
S.Y.	Square Yard	0.8361	m^2	Square Meter	M2
SY-IN	Square Yard-Inch	0.8495	m^2-25 mm	Square Meter-25 Millimeter	M2-25 MM
TON	Ton	.9072	t	Metric Ton (1000kg)	TON
N.A.*	Kip	4.448	kN	Kilonewton	N.A.*
N.A.*	Thousand Pounds per Square Inch	6.895	MPa	Megapascal	N.A.*

*Not used for units of measurement for payment.

GENERAL NOTICES

AMTRAK CONSTRUCTION CONTRACT SPECIAL LANGUAGE:

Bidders need to make themselves aware of all contract documents and appendices, especially those pertaining to Amtrak liability, site entrance, and insurance requirements, as well as the following;

Contractor shall defend, indemnify and hold harmless, Amtrak, the State of Delaware, its Department of Transportation, its Delaware Transit Corporation, their respective officers, directors, employees, successors, assigns, and subsidiaries, whether or not Amtrak, the State of Delaware, its Department of Transportation, its Delaware Transit Corporation, their respective officers, directors, employees, agents servants, successors, assign, and subsidiaries are negligent, from and against any and all losses and liabilities, penalties, fines forfeitures, demands, claims, causes of action, suits, costs and expenses incidental thereto (including cost of defense and attorney's fees), which any or all of them may hereafter incur, be responsible for or pay as a result of injury, death, disease, or occupational disease to any person (including employees of the contractor or anyone acting for or by permission of the contractor) and for damage including environmental contamination and loss of use, to or loss of any property, including property of Parties hereto, arising out of or in any degree directly or indirectly caused by or resulting from activities or work performed by contractor, contractor's officers, employees, agents, servants, subcontractors at any tier, or any other person or entity acting for or by permission of the contractor.

The indemnification obligation as herein set forth shall not be limited by the existence of any insurance policy or by any limitation on the amount or type of damages, compensation or benefits payable by or for contractor and any of its subcontractors at any tier and shall survive the termination of ths agreement of any reason. It is intended that an independent contractor relationship shall be created by this Agreement. As between the contractor, Amtrak and DTC, the contractor shall be responsible for any liability to third parties resulting from acts or omissions of the contractor, its agents, employees or subcontractors arising from or occurring in the course of the performance of its work. No act or direction of Amtrak shall be deemed to be the exercise of supervision or control of the contractor's performance hereunder contrary to such independent contractor relationship.

SPECIFICATIONS:

The specifications entitled "Delaware Standard Specifications, for Road and Bridge Construction, August, 2001", hereinafter referred to as the Standard Specifications, Supplemental Specifications, the Special Provisions, notes on the Plans, this Bid Proposal, and any addenda thereto shall govern the work to be performed under this contract.

CLARIFICATIONS:

Under any Section or Item included in the Contract, the Contractor shall be aware that when requirements, responsibilities, and furnishing of materials are outlined in the details and notes on the Plans and in the paragraphs preceding the " Basis of Payment" paragraph in the Standard Specifications or Special Provisions, no interpretation shall be made that such stipulations are excluded because reiteration is not made in the "Basis of Payment" paragraph.

ATTESTING TO NON-COLLUSION:

The Department requires as a condition precedent to acceptance of bids a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract. The form for this sworn

statement is included in the proposal and must be properly executed in order to have the bid considered.

QUANTITIES:

The quantities shown are for comparison of bids only. The Department may increase or decrease any quantity or quantities without penalty or change in the bid price.

REQUIREMENT BY DEPARTMENT OF LABOR FOR SWORN PAYROLL INFORMATION

Delaware Code, Title 29, Chapter 69, Section 6960, Paragraph

> "Every contract based upon these specifications shall contain a stipulation that certified sworn payroll reports be maintained by every contractor and subcontractor performing work upon the site of construction. The contractor and subcontractor shall keep and maintain the sworn payroll information for a period of two (2) years from the last day of the work week covered by the payroll. A certified copy of these payroll reports shall be made available:
>
> 1. For inspection or furnished upon request to a representative of the Department of Labor;
> 2. Upon request by the public or for copies thereof. However, a request by the public must be made through the Department of Labor. The requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Department of Labor in accordance with the Department's copying fee policy. The public shall not be given access to the records at the principal office of the contractor or subcontractor; and
> 3. The certified payroll records shall be on a form provided by the Department of Labor or shall contain the same information as the form provided by the Department and shall be provided within ten (10) days from receipt of notice requesting the records from the Department of Labor."

Contractor may contact:

Department of Labor
Division of Industrial Affairs
4425 No. Market Street
Wilmington, DE 19802

Telephone (302) 761-8200

PREFERENCE FOR DELAWARE LABOR:

Delaware Code, Title 29, Chapter 69, Section 6962, Paragraph (d), Subsection (4)b

> "In the construction of all public works for the State or any political subdivision thereof, or by firms contracting with the State or any political subdivision thereof, preference in employment of laborers, workmen or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State. Each public works contract for the construction of public works for the State or any political subdivision thereof shall contain a stipulation that any person, company or corporation who violates this section shall pay a penalty to the Secretary of Finance equal to the amount of compensation paid to any person in violation of this section."

CONFLICT WITH FEDERAL STATUTES OR REGULATIONS:

Delaware Code, Title 29, Chapter 69, Section 6904, Paragraph (a)

"If any provision of this subchapter conflicts or is inconsistent with any statute, rule or regulation of the federal government applicable to a project or activity, the cost of which is to be paid or reimbursed in whole or in part by the federal government, and due to such conflict or inconsistency the availability of federal funds may be jeopardized, such provision shall not apply to such project or activity."

For all contracts which are identified as Federal-aid projects by having a Federal-aid number inserted in the appropriate space on the cover sheet of the proposal, if there is a conflict between the above Section 6962 and Federal law ~~and~~ the requirements of the above Section 6962 shall not apply.

FEDERAL LABOR AND EMPLOYMENT REQUIREMENTS

Federal Regulation 23 CFR § 635.117(b) Labor and employment, states:

"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."

EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS:

Delaware Code, Title 29, Chapter 69, Section 6962, Paragraph (d), Subsection (7)

"a. As a condition of the awarding of any contract for public works financed in whole or in part by State appropriation, such contracts shall include the following provisions:

`During the performance of this contract, the contractor agrees as follows:

I. The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex or natural origin. The contractor will take positive steps to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, sex or national origin. Such action 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 agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

ii. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex or national origin.'

TAX CLEARANCE:

As payments to each vendor or contractor aggregate $2,000, the Division of Accounting will report such vendor or contractor to the Division of Revenue, who will then check the vendor or contractor's compliance with tax requirements and take such further action as may be necessary to insure compliance.

LICENSE:

A person desiring to engage in business in this State as a contractor shall obtain a license upon making application to the Division of Revenue. Proof of said license compliance to be made prior to, or in conjunction with, the execution of a contract to which he has been named.

* * * * *

TO REPORT BID RIGGING ACTIVITIES:

CALL 1-800-424-9071

The U. S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

CONVICT PRODUCED MATERIALS:

(a) Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal-aid highway construction project if such materials have been:

(1) Produced by convicts who are on parole, supervised release, or probation from a prison or
(2) Produced in a qualified prison facility and the cumulative annual production amount of such materials for use in Federal-aid highway construction does not exceed the amount of such materials produced in such facility for use in Federal-aid highway construction during the 12-month period ending July 1, 1987.

(b) Qualified prison facility means any prison facility in which convicts, during the 12-month period ending July 1, 1987, produced materials for use in Federal-aid highway construction projects.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

Goals for Minority Participation In Each Trade	Goals for Female Participation In Each Trade
12.3% (New Castle County) 14.5% (Kent & Sussex Counties)	6.9% (Entire State)

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the Executive Order and the regulations in CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must 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 projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is NEW CASTLE County.

REV. 11-3-80

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
d. "Minority" includes:

   i. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
   ii. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
   iii. 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
   iv. 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. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted 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. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Program Office or from the Federal procurement contracting offices. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. 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 under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure 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 actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. 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, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site 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.

b. 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.

c. 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 therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director 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.

e. 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 the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. 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 minority and female 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.

g. 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 on-site supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation of construction work at any job 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.

h. 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.

i. 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.

j. 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 a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

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

m. Ensure that seniority practices, job 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.

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

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

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

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). 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 any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participating, 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.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, 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 under utilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

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

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Order of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. 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. 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, status (e.g., mechanic, apprentice, trainee, helper, or laborer), 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.

15. 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).

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TRAINING SPECIAL PROVISIONS

This Training Special Provision supersedes subparagraph 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities", (Attachment 1), and is in implementation of 23 U.S.C. 140(a).

As part of the contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyman in the type of trade or job classification involved. The number of trainees to be trained under the special provision will be 0. In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training

Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year apprenticeship or training.

The number of trainees shall be distributed among the work classification on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Department of Highways and Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Department of Highways and Transportation and the Federal Highway Administration. The Department of Highways and Transportation and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work the classification covered by the program. It is the intention of these provisions that the training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some off-site training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other sources does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for off-site training indicated above may only be made to the contractor where he does one or more of the following and the trainees are

concurrently employed on a Federal-aid project; contributes to the cost of the training; provides the instruction of the trainee; or pays the trainee's wages during the off-site training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainees as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program. It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid a least 60 percent of the appropriate minimum journeymen's rate specified in the contract for the first half of the of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees is an approved existing program are enrolled as trainees on this project. In fact case, the appropriate rates approved by the Department of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provisions.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training.

The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily completed.

The contractor will provided for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

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INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT & TRANSPORTATION EQUITY ACT

Recipients of Federal-aid highway funds authorized under Titles I (other than Part B) and V of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), or Titles I, III, and V of the Transportation Equity Act for the 21st Century (TEA-21) are required to comply with the regulations of 49 Code of Federal Regulations (CFR) Part 26 - Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs.

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DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM SPECIFICATION

The U.S. Department of Transportation (DOT) requires that the Delaware Department of Transportation continue the established Disadvantaged Business Enterprise (DBE) Program for participation in U.S. DOT programs and that the program follow the final rules as stated in 49 CFR Part 26 and the Department's approved DBE Program plan.

The following definitions apply to this subpart:

Disadvantaged Business Enterprise or DBE means a for-profit small business concern (1) that is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and, (2) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

DOT-assisted contract means any contract between a recipient and a contractor (at any tier) funded in whole or in part with DOT financial assistance, including letters of credit or loan guarantees, except a contract solely for the purchase of land.

Good Faith Efforts means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

Joint Venture means an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

Race-conscious measure or program is one that is focused specifically on assisting only DBEs, including women-owned DBEs.

Race-neutral measure or program is one that is, or can be, used to assist all small businesses. For the purposes of this part, race-neutral includes gender neutrality.

Small Business concern means, with respect to firms seeking to participate as DBEs in DOT-assisted contracts, a small business concern as defined pursuant to section 3 of the Small Business Act and Small Business Administration regulations implementing it (13 CFR part 121) that also does not exceed the cap on average annual gross receipts specified in 49 CFR §26.65(b).

Socially and economically disadvantaged individuals means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is - (1) any individual who a recipient finds to be a socially and economically disadvantaged individual on a case-by-case basis; (2) any individual in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

(i) Black Americans which includes persons having origins in any of the Black racial groups of Africa;
(ii) Hispanic Americans which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
(iii) Native Americans which includes persons who are American Indians, Eskimos, Aluets, or Native Hawaiians;
(iv) Asian-Pacific Americans which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;

(v) Subcontinent Asian Americans which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
(vi) Women;
(vii) Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

DelDOT will establish specific goals for each particular DOT-assisted project which will be expressed as a percentage of the total dollar amount of contract bid.

The specific contract goals for this contract are:

Disadvantaged Business Enterprise 14 % Percent

DelDOT continues to reserve the right to approve DBE subcontractors and all substitutions of DBE subcontractors prior to award and during the time of the contract.

Bidders are required to submit with their bids the completed DBE Program Assurance portion of the Certification document which will state the bidders intent of meeting the goals established for this contract; or in the instance where a contractor cannot meet the assigned DBE Goals for this contract, he/she shall at the time of bid submit documentation required to verify that he/she has made a Good Faith Effort to meet the DBE Goals. Guidance for submitting a Good Faith Effort is identified in the next section and in the DBE Program Plan. Further, the apparent low bidder must submit to DelDOT within ten (10) calendar days after the bid opening, executed originals of each and every DBE subcontract to satisfy contract goals consistent with the DBE Program Assurance submitted as part of the bid package.

No contract work shall be performed by a DBE subcontractor until the executed DBE subcontract is approved in writing by DelDOT and the Department has issued the required Notice to Proceed. Any DBE subcontract relating to work to be performed pursuant to this contract, which is submitted to DelDOT for approval, must contain all DBE subcontractor information, the requirements contained in this contract, and must be fully executed by the contractor and DBE subcontractor.

Each contract between the prime contractor and each DBE subcontractor shall at the minimum include the following:

1. All pertinent provisions and requirements of the prime contract.
2. Description of the work to be performed by the DBE subcontractor.
3. The dollar value of each item of work to be completed by the DBE subcontractor and the bid price of each item of work to be completed by the DBE subcontractor.

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CRITICAL DBE REQUIREMENTS

A bid may be held to be non-responsive and not considered if the required DBE information is not provided. In addition, the bidder may lose its bidding capability on Department projects and such other sanctions as the Department may impose. It is critical that the bidder understands:

1. In the event that the bidder cannot meet the DBE goal as set forth in this specification, he/she shall at the time of bid submit to the Department that percentage of the DBE Goal that will be met, if any, on the written and notarized assurance made a part of this contract. The contractor shall also at the time of bid submit all documentation that the contractor wishes to have the Department consider in determining that the contractor made a Good Faith Effort to meet contract DBE Goals. The Department will not accept Good Faith Effort documentation other than on the scheduled date and time of the bid opening. However, the Department may ask for clarification of information submitted should the need arise.

2. A bid which does not contain either a completely executed DBE Program Assurance and/or Good Faith Effort documentation, where appropriate, shall be declared non-responsive and shall not be considered by the Department.

3. Bidders shall submit with their bid the name, address, age of the firm, and the gross annual receipts of each DBE and non-DBE subcontractor that supplied a quote or a bid to the prime on this project. The Department has attached this document following the Certification document at the end of the Proposal. Failure to submit this information will result in the bid being declared non-responsive and will be rejected.

4. Failure of the apparent low bidder to present originals of all DBE subcontracts to substantiate the volume of work to be performed by DBE's as indicated in the bid within ten (10) calendar days after the bid opening shall create a rebuttable presumption that the bid is not responsive.

5. Bidders are advised that failure to meet DBE Goals during the term of the contract may subject them to Department sanctions as identified in the DBE Program Plan.

6. In the execution of this contract, the successful bidder agrees to comply with the following contract clauses:

Prompt Payment: The prime contractor/consultant receiving payments shall, within 30 days of receipt of any payment, file a statement with the Department on a form to be determined by the Department that all subcontractors furnishing labor or material have been paid the full sum due them at the stage of the contract, except any funds withheld under the terms of the contract as required by Chapter 8, Title 17 of the Delaware Code, annotated and as amended. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of DelDOT. This clause applies to both DBE and non-DBE subcontractors.

Retainage: The prime contractor agrees to return retainage to each subcontractor within 15 calendar days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of DelDOT. This clause covers both DBE and non-DBE subcontractors. As guidance, once a subcontractor has satisfactorily completed the physical work, and has given to the prime contractor a certified statement that all laborers, lower tier contractors, and materialmen who have furnished labor and materials to the subcontractor have been paid all monies due them, the prime contractor shall return retainage to the subcontractor within 15 calendar days.

7. In the execution of this contract, the successful bidder agrees to comply with the following contract assurance and will include this same language in each subcontractor contract:

"The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such remedy as the recipient deems appropriate." 49 CFR Section 26.13

8. In addition to this specification, bidders must comply with all provisions of the rules and regulations adopted by the U.S. Department of Transportation for DBE participation in U.S. DOT and DelDOT Programs (49 CFR Part 26) and the Delaware Department of Transportation Disadvantaged Business Enterprise Program Plan; each of which is hereby incorporated and made part of this specification. Bidders are also reminded that they must be responsible and responsive bidders in all other aspects aside from the DBE Program in order to be awarded the contract.

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GUIDANCE FOR GOOD FAITH EFFORT

When the DBE Goals established for a contract by DelDOT are not met, the contractor shall demonstrate good faith efforts to meet the DBE contract goals. The contractor shall demonstrate that the efforts made were those that a contractor actively and aggressively seeking to meet the goals established by DelDOT would make, given all relevant circumstances. Evidence of this good faith effort will be submitted with the bid at the time of the bid opening.

The contractor is expected to demonstrate good faith efforts by actively and aggressively seeking out DBE participation in the project to the maximum extent, given all relevant circumstances. Following are the kinds of efforts that may be taken but are not deemed to be exclusive or exhaustive and DelDOT will consider other factors and types of efforts that may be relevant:

1. Efforts made to select portions of the work proposed to be performed by DBEs in order to increase the likelihood of achieving the stated goal. Selection of portions of work are required to at least equal the goal for DBE utilization specified in this contract.

2. Written notification at least ten (10) calendar days prior to the opening of a bid soliciting DBE interest in participating in the contract as a subcontractor or supplier and for specific items of work.

3. Efforts made to obtain and negotiate with DBE firms for specific items of work:
   a. Description of the means by which firms were solicited (i.e. by telephone, e-mail, written notice, advertisement).
   b. The names, addresses, telephone numbers of DBE's contacted, the dates of initial contact; and whether initial solicitations of interest were followed-up by contacting the DBEs to determine with certainty whether the DBEs were interested.
   c. A description of the information provided to DBE firms regarding the plans, specifications and estimated quantities for portions of the work to be performed.
   d. A statement of why additional agreements with DBE's were not reached in order to meet the projected goal.
   e. Listing of each DBE contacted but not contracted and the reasons for not entering a contract.

4. Efforts made to assist DBEs that need assistance in obtaining bonding, insurance, or lines of credit required by the contractor.

5. Reasons why certified DBEs are not available or not interested.

6. Efforts to effectively use the services of available disadvantaged community organizations; disadvantaged contractor's groups; local, state and federal DBE assistance offices; and other organizations that provide assistance in recruitment and placement of DBEs.

The following are examples of actions that may not be used as justification by the contractor for failure to meet DBE contract goals:

1. Failure to contract with a DBE solely because the DBE was unable to provide performance and/or payment bonds.
2. Rejection of a DBE bid or quotation based on price alone.
3. Rejection of a DBE because of its union or non-union status.
4. Failure to contract with a DBE because the contractor normally would perform all or most of the work in the contract.

Administrative reconsideration:

Within five (5) days of being informed by DelDOT that it is not responsive because it has not documented sufficient good faith efforts, a bidder may request administrative reconsideration. Bidder should make this request in writing to the following reconsideration official: Director of Administration, DelDOT, P. O. Box 778, Dover, Delaware 19903. The reconsideration official will not have played any role in the original determination that the bidder did not document sufficient good faith efforts.

As part of this reconsideration, the bidder will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate

good faith efforts to do so. The bidder will have the opportunity to meet in person with the reconsideration official, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. The final decision made by the reconsideration official will be communicated to the bidder in writing. The result of the reconsideration process is not administratively appealable to the U.S. Department of Transportation.

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REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

(Exclusive of Appalachian Contracts)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4, and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. **Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

> "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

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

6. **Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract

performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

   a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

   b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

   c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

   d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

   a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

   b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to

utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The

only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. **General:**

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. **Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. **Payment of Fringe Benefits:**

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. **Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. **Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. **Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. **Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or

permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. **Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. **Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. **Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. **Payrolls and Payroll Records:**

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the

wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V, and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent

when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be

performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. **Instructions for Certification - Primary Covered Transactions:**

   (Applicable to all Federal-aid contracts - 49 CFR 29)

   a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

   b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. **Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal

agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

Form FHWA-1273 (Rev. 3-94)

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REQUIRED FTA CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

1. AUDIT AND INSPECTION OF RECORDS

The Contractor agrees to provide the Delaware Department of Transportation (Department), the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives' access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C. F. R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311. By definition, a major capital project excludes contracts of less than the simplified acquisition threshold.

The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

2. ACCESS REQUIREMENTS FOR INDIVIDUALS WITH DISABILITIES

The Contractor agrees to comply with all applicable requirements of the Americans with Disabilities Act of 1990 (ADA), 42 U.S.C. Section 12101 et seq. And 49 U.S.C. Section 322; Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. Section 794; Section 16 of the Federal Transit Act, as amended, 49 U.S.C. App. Section 1612; and implementing regulations, as may be amended

3. BUY AMERICA

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. 661.7, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, and microcomputer equipment and software. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content.

A bidder or proposer must submit to the Department the appropriate Buy America certification (included in this bid proposal package) with all bids or proposals on FTA-funded contracts, except those subject to a general waiver. Bids or proposals that are not accompanied by a completed Buy America certification must be rejected as nonresponsive.

4. CARGO PREFERENCE
Use of United States-Flag Vessels - The contractor agrees: a. to use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels; b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of leading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of -lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the Department (through the contractor in the case of a subcontractor's bill-of-lading.) c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

5. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS - Lower Tier Covered Transactions (Third Party Contracts over $100,000)

A) By signing and submitting this bid or proposal, the prospective lower tier participant is providing the signed certification set out below.

B) The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department may pursue available remedies, including suspension and/or debarment.

C) The prospective lower tier participant shall provide immediate written notice to the Department if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

D) The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "persons," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 [49 CFR Part 29]. You may contact the Department for assistance in obtaining a copy of those regulations.

E) The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized in writing by the Department.

F) The prospective lower tier participant further agrees by submitting this proposal that it will include the clause "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction", without modification, in all lower tier covered transactions.

G) A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List issued by the U. S. General Service Administration.

H) Nothing contained in the foregoing shall be construed to require establishment of system of records in order to render in good faith the certification required by this clause. The knowledge and

information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

I) Except for transactions authorized under Paragraph E of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible or voluntarily excluded from participation in this transaction, in addition to all remedies available to the Federal Government, the Department may pursue available remedies including suspension and/or debarment.

J) The prospective lower tier participant certifies, by submission of this bid or proposal, that neither it nor its "principals" [as defined at 49 CFR §29.105(p)] is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

K) When the prospective lower tier participant is unable to certify to the statements in this certification, such prospective participant shall attach an explanation to this proposal.

6. CLEAN WATER REQUIREMENTS
The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. The Contractor agrees to report each violation to the Department and understands and agrees that the Department will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. (2)The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FTA.

7. FEDERAL CHANGES
Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the Department and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

8. CLEAN AIR
(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq . The Contractor agrees to report each violation to the Department and understands and agrees that the Department will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. (2) The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FTA.

9. RECYCLED PRODUCTS
Recovered Materials - The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

10. ENERGY CONSERVATION
The Contractor shall recognize mandatory standards and policies relating to energy efficiency which are contained in the State Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act (42 US Section 321 et seq.).

11. CONTRACT TERMINATION
A. Termination for Convenience
The Department may terminate this contract, in whole or in part, at any time by written notice to the Contractor. The Contractor shall be paid its costs, including contract close-out costs, and profit on product delivered up to the time of termination. The Contractor shall promptly submit its

termination claim for payment. If the Contractor has any property in its possession belonging to the Department, the Contractor will account for the same and dispose of it in the manner the Department directs.

B. Termination for Default
If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or, if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the Department may terminate this contract for default. Termination shall be affected by serving a notice of termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract.

If it is later determined that the Contractor had an excusable reason for not performing, such as a strike, flood, events which are not the fault of or are beyond the control of the Contractor, the Department, after setting up a new delivery or performance schedule, may allow the Contractor to continue work, or treat the termination as a termination of convenience.

In the event the Department exercises its right of termination for default, and if an amount for liquidated damages is set forth, the Contractor shall be liable to the Department for excess costs and, in addition, for liquidated damages in the amount set forth, as fixed, agreed, and liquidated damages for each calendar day of delay, until such time as the Department may reasonably obtain delivery or performance of similar supplies or services.

If the contract is so terminated, the Contractor shall continue performance and be liable to the Department for such liquidated damages for each calendar day of delay until the supplies are delivered or services performed.

The Contractor shall not be liable for liquidated damages resulting from delays such as acts of God, strikes, fire or flood, and events which are not the fault of, or are beyond the control of the Contractor.

12. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT
(1) Overtime requirements - No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Payrolls and basic records - (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration

of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

Section 107 (OSHA):
Contract Work Hours and Safety Standards Act - (i) The Contractor agrees to comply with section 107 of the Contract Work Hours and Safety Standards Act, 40 U.S.C. section 333, and applicable DOL regulations, " Safety and Health Regulations for Construction " 29 C.F.R. Part 1926. Among other things, the Contractor agrees that it will not require any laborer or mechanic to work in unsanitary, hazardous, or dangerous surroundings or working conditions.

(ii)Subcontracts - The Contractor also agrees to include the requirements of this section in each subcontract. The term "subcontract" under this section is considered to refer to a person who agrees to perform any part of the labor or material requirements of a contract for construction, alteration or repair. A person who undertakes to perform a portion of a contract involving the furnishing of supplies or materials will be considered a "subcontractor" under this section if the work in question involves the performance of construction work and is to be performed: (1) directly on or near the construction site, or (2) by the employer for the specific project on a customized basis. Thus, a supplier of materials which will become an integral part of the construction is a "subcontractor" if the supplier fabricates or assembles the goods or materials in question specifically for the construction project and the work involved may be said to be construction activity. If the goods or materials in question are ordinarily sold to other customers from regular inventory, the supplier is not a "subcontractor." The requirements of this section do not apply to contracts or subcontracts for the purchase of supplies or materials or articles normally available on the open market.

13. CIVIL RIGHTS
(1) Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

(2) Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying contract:
(a) Race, Color, Creed, National Origin, Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq ., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action 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. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(b) Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(c) Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(3) The contractor agrees to comply with all applicable requirements of the Americans with Disabilities Act of 1990 (ADA), 42 U.S.C. Section 12101 et seq. And 49 U.S.C. Section 322; Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. Section 794; Section 16 of the Federal Transit Act, as amended, 49 U.S.C. App. Section 1612; and implementing regulations, as may be amended.

(4) The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

14. DAVIS-BACON ACT
Applies to contractors and subcontractors

1.) Minimum wages - (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) Except with respect to helpers as defined as 29 CFR 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) With respect to helpers as defined in 29 CFR 5.2(n)(4), such a classification prevails in the area in which the work is performed.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(v)(A) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination with 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(2) Withholding - The Department shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the [insert name of grantee] may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records - (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Department for transmission to the Federal Transit Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR part 5 and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees - (i) Apprentices - Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually

performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division of the U.S. Department of Labor determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees - Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity - The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements - The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts - The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment - A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements - All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards - Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility - (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

15. DISADVANTAGED BUSINESS ENTERPRISES

It is the policy of the Department of Transportation that Disadvantaged Business Enterprises as defined in 49 CFR Part 26 shall have the opportunity to participate in the performance of contracts financed in whole or part with Federal funds under this contract. Consequently the DBE Requirements of 49 CFR Part 26 apply to this contract. The recipient or its contractor agrees to ensure that Disadvantaged Business Enterprises as defined in 49 CFR Part 26 have the opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds provided under this contract. In this regard all recipients or contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that Disadvantaged Business Enterprises have the opportunity to compete for and perform contracts. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of FTA assisted subcontracts. 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.

The successful bidder agrees to comply with the following clauses:

Prompt Payment: The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contractor receives from the Department. This clause applies to both DBE and Non-DBE subcontractors.

Retainage: The prime contractor agrees to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Department. This clause applies to both DBE and non-DBE subcontractors.

The specific goal for this contract is:

Disadvantaged Business Enterprise 14 Percent

16. ENVIRONMENTAL VIOLATIONS
The Contractor agrees to comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 USC 1857 (h)), Section 508 of the Clean Water Act (33 USC 1368), Executive Order 11378, and Environmental Protection Agency regulations: (40 CFR, Part 15) which prohibit the use under nonexempt Federal contracts, grants or loans, of facilities included on the EPA List for Violating Facilities. The Contractor shall report violations to the FTA.

17. EQUAL EMPLOYMENT OPPORTUNITY
In connection with the execution of this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, creed, religion, color, national origin, age, sex or disability. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are tested during their employment without regard to their race, creed, religion, color, national origin, age, sex or disability. Such actions shall include, but not b limited to the following, employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay, or other forms of compensation. The Contractor further agrees to insert a similar provision in all subcontracts, except subcontracts for standard commercial supplies or raw materials.

18. FLY AMERICA REQUIREMENTS
The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

19. FTA FUNDING REQUIREMENTS
This project may be financed in part by funds from the Federal Transit Administration. Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the Department and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

20. INCORPORATION OF FTA TERMS (FEDERAL TRANSIT ADMINISTRATION)
The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by FTA, as set forth in FTA Circular 4220.1F are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any Department requests which would cause the Department to be in violation of the FTA terms and conditions.

21. LOBBYING**:**
The Contractor is required to certify using the Certification of Restrictions on Lobbying Form included that, to the best of his or her knowledge and belief:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an

agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq .)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

The certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of the certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure.

22. NO GOVERNMENT OBLIGATION TO THIRD PARTIES

(1) The Department and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Department, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

(2) The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

23. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS

(1) The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq . and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

(2) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

(3) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

24. PROTEST PROCEDURES
Protests based upon the award of the contract shall be made in writing to the Contract Services Administrator no later than ten (10) calendar days following the award of the contract. The protest must clearly specify in writing the grounds and evidence on which the protest is based. The protest will be reviewed and decided pursuant to; the proposal documents issued by the Department, the Delaware Code, the Department's Standard Specifications for Road and Bridge Construction, August 2001, and the Federal Transit Authority's regulations.

25. RECORD RETENTION
The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until the Department, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).

26. SEISMIC SAFETY
The contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation Seismic Safety Regulations 49 CFR Part 41 and will certify to compliance to the extent required by the regulation. The contractor also agrees to ensure that all work performed under this contract including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the project.

27. TITLE VI COMPLIANCE
During the performance of any Contract entered into pursuant to these specifications, the Contractor, for itself, its assignees and successor in interest, agrees that it shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. section 2000d) and the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations Part 21, as they may be amended from time to time which are incorporated by reference and made a part of this contract.

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DIFFERING SITE CONDITIONS,

SUSPENSIONS OF WORK and SIGNIFICANT CHANGES IN THE CHARACTER OF WORK:

Differing site conditions: 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 of 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

in writing of the specific differing conditions before they are disturbed and before the affected work is performed.

Upon written notification, the engineer will investigate the conditions, and if he/she determines 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 loss of anticipated profits, will be made and the contract modified in writing accordingly. The engineer will notify the contractor of his/her determination whether or not an adjustment of the contract is warranted.

No contract adjustment which results in a benefit to the contractor will be allowed unless the contractor has provided the required written notice.

No contract adjustment will be allowed under their clause for any effects caused on unchanged work.

Suspensions of work ordered by the engineer: If the performance of all or any portion of the work is suspended or delayed by the engineer in writing for an unreasonable period of time (not originally anticipated, customary or inherent to the construction industry) and the contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the contractor shall submit to the engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set fourth the reasons and support for such adjustment.

Upon receipt, the engineer will evaluate the contractor's request. If the engineer 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 conditions 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 engineer will notify the contractor of his/her determination whether or not an adjustment of the contract is warranted.

No contract adjustment will be allowed unless the contractor has submitted the request for adjustment within the time prescribed.

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 for or excluded under any other term or condition of this contract.

Significant changes in the character of work: 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 the work under the contract, whether or not changed by any such different quantities or alterations, an adjustment, excluding loss of 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 either for or against the contractor in such amount as the engineer may determine to be fair and equitable.

The term "significant change" shall be construed to apply only to the following circumstances:

(A) 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

(B) 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 an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

PREVAILING WAGES

Included in this proposal are the minimum wages to be paid various classes of laborers and mechanics as determined by the Department of Labor of the State of Delaware in accordance with Title 29 Del.C. §6960, relating to wages and the regulations implementing that Section.

Title 29 Del.C. §6960 relating to wages further stipulates "that the employer shall pay all mechanics and laborers employed directly upon the site of the work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics", and ... "that the scale of wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work, and that there may be withheld from the employer so much of accrued payments as may be considered necessary by the Department of Labor to pay to laborers and mechanics employed by the employer the difference between the rates of wages required by the contract to be paid laborers and mechanics on the work and rates of wages received by such laborers and mechanics to be remitted to the Department of Labor for distribution upon resolution of any claims."

Bidders are specifically directed to note the Department of Labor's regulations implementing §6960 relating to the effective date of the wage rates, at Part VI., Section C., which in relevant part states:

> "Public agencies (covered by the provisions of 29 Del.C. §6960) are required to use the rates which are in effect on the date of the publication of specifications for a given project. In the event that a contract is not executed within one hundred twenty (120) days from the date the specifications were published, the rates in effect at the time of the execution of the contract shall be the applicable rates for the project."

PREVAILING WAGE REQUIREMENTS

It is DelDOT's understanding that the Davis-Bacon Act is not a preemptive statute in the broad sense, and does not preempt or displace State of Delaware prevailing wage requirements.

When a contract for a project contains both Federal Davis-Bacon and State of Delaware prevailing wage standards because of concurrent Federal and State coverage, the employer's minimum wage obligations are determined by whichever standards are higher.

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 451-3423

Mailing Address:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

Located at:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

PREVAILING WAGES FOR **HIGHWAY CONSTRUCTION** EFFECTIVE MARCH 15, 2011

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
BRICKLAYERS	44.98	44.98	14.51
CARPENTERS	40.86	48.31	38.62
CEMENT FINISHERS	28.11	24.68	23.29
ELECTRICAL LINE WORKERS	22.50	54.05	54.05
ELECTRICIANS	57.10	57.10	57.10
IRON WORKERS	42.20	22.98	25.35
LABORERS	25.44	23.33	24.00
MILLWRIGHTS	16.11	15.63	13.49
PAINTERS	41.42	41.42	41.42
PILEDRIVERS	59.23	23.75	26.95
POWER EQUIPMENT OPERATORS	31.46	26.00	26.31
SHEET METAL WORKERS	22.75	20.31	18.40
TRUCK DRIVERS	26.54	21.68	19.96

CERTIFIED: 4/4/11 BY: _____
ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE (302) 451-3423.

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

PROJECT: T200751201.01 Northeast Corridor Improvements Yard to Ragan , Civil Structure, New Castle County

GENERAL DECISION: DE100013 5/21/2010 DE13

General Decision Number: DE100013

State: DELAWARE
Construction Type: HIGHWAY
COUNTY: New Castle County in Delaware

HIGHWAY CONSTRUCTION PROJECTS: (excluding tunnels, building structures in rest area projects and railroad construction; bascule, suspension and spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Modification Number	Publication Date
0	05/21/2010

SUDE2010-001 05/01/2009

	Rates	Fringes
Bricklayer	43.48	
Carpenter	40.35	
Cement Mason/Concrete Finisher	31.04	
ELECTRICIAN		
Electrician	55.35	
Line Worker	34.29	
Ironworker	42.20	
Laborer	23.81	
Millwright	16.11	
Painter	51.47	
Piledriverman	59.23	
Power Equipment Operation	33.37	
Truck Driver	26.19	

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

APPLICABILITY OF DAVIS-BACON LABOR STANDARD PROVISIONS TO FLAGGERS

The U.S. Department of Labor has established that the duties of flaggers working on contracts covered by the Davis-Bacon Act, are manual and physical in nature. Accordingly, all employees performing the work of flaggers on Davis-Bacon covered contracts shall be entitled to receive applicable prevailing wage rates.

* * * * *

ALL AGENCY MEMORANDUM NO. 130
U.S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
WAGE AND HOUR DIVISION
WASHINGTON, DC 20210

GUIDELINES

HIGHWAY CONSTRUCTION

Highway projects include the construction, alteration, or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction.

EXAMPLES: Alleys, Base Courses, Bituminous treatments, Bridle Paths, Concrete pavement, Curbs, Excavation and embankment (for road construction), Fencing (highway), Grade crossing elimination (overpasses and underpasses), Guard rails on highway, Highway signs, Highway bridges (overpasses, underpasses, grade separation), Medians, Parking lots, Parkways, Resurfacing streets and highways, Roadbeds, Roadways, Runways, Shoulders, Stabilizing courses, Storm sewers incidental to road construction, Street paving, Surface courses, Taxiways, and Trails.

ANY QUESTIONS REGARDING THE APPLICATION OF THE GUIDELINES ABOVE TO A PARTICULAR PROJECT OR ANY DISPUTES REGARDING THE APPLICATION OF THE WAGE SCHEDULES ARE TO BE REFERRED TO THE WAGE AND HOUR DIVISION, U.S. DEPARTMENT OF LABOR FOR RESOLUTION, AND THE INSTRUCTIONS OF THE WAGE AND HOUR DIVISION ARE TO BE OBSERVED IN ALL INSTANCES.

* ALL AGENCY MEMORANDUM NO. 130
U.S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION
WAGE AND HOUR DIVISION
WASHINGTON, DC 20210

SUPPLEMENTAL SPECIFICATIONS TO THE AUGUST 2001 STANDARD SPECIFICATIONS

EFFECTIVE AS OF THE ADVERTISEMENT DATE OF THIS PROPOSAL AND INCLUDED BY REFERENCE

The Supplemental Specifications can be viewed and printed from the Department's Website.

To access the Website;
- in your internet browser, enter; http://www.deldot.gov
- on the left side of the page under 'INFORMATION', Click; 'Publications'
- scroll down under 'MANUALS' and Click; "Standard Specifications 2001"

The full Website Link is;
http://www.deldot.gov/information/pubs_forms/manuals/standard_specifications/index.shtml

Printed copies of the Supplemental Specifications are available upon request. A printed copy of the above referenced Supplemental Specifications will be included in the final contract documents upon award.

The Contractor shall make himself aware of these revisions and corrections (Supplemental Specifications), and apply them to the applicable item(s) of this contract.

SPECIAL PROVISIONS

CHANGES TO PROJECT DOCUMENTS DURING ADVERTISEMENT

1. PRINTED PLANS AND SPECIFICATIONS NOT AVAILABLE FROM DELDOT.

The Department is not providing printed plans or specifications for this project. Bidders must contact the Department in order to receive a CD that contains all bid documents. Bidders are able to use the CD to print the plans and specifications, or have them printed from the Website. While the plans and specifications are available on-line at DelDOT's Website, the Website bid documents are not authorized for submitting bids, and the Website documents are marked as such. To receive required bid Documents on a CD, contact:

Contract Administration
Delaware Department of Transportation
P.O. Box 778, Dover, DE 19903
e-mail: dot-ask@state.de.us
Phone: (302) 760-2030
FAX: (302) 739-2254

The Department is providing a printed set of plans and specifications available for viewing in the Bidder's Room, Transportation Administration Center, 800 Bay Road, Dover, Delaware, Monday through Friday excluding holidays from 8:00A.M. through 4:15 P.M..

2. QUESTIONS AND ANSWERS

All questions pertaining to this project are to be submitted to the following e-mail address:

dot-ask@state.de.us

Questions and Answers will be dated and posted periodically on Delaware's Bid Solicitation Directory Website located at: http://www.bids.delaware.gov/

The final Questions and Answers will be posted no later than the end of the day, two working days prior to the bid date.

All Questions and Answers posted by the Department on the above Website are included by reference and become part of the contract documents. The awarded bidder will receive a hard copy of the final posted Questions and Answers.

Potential bidders that do not have access to the internet may contact Jim Hoagland, Contract Services Administrator, by telephone at (302) 760-2036 to make other arrangements.

NOTE: There is space provided on the CERTIFICATION page to insert the Posted Date of the final Questions and Answers. The Final Posted Date is the latest Posted Date of the Questions and Answers one day prior to Bid Date. **This final Posted Date must be submitted on the Certification page or your bid will be considered Non-responsive** and not considered for award.

3. ADDENDA

The Department is not providing printed Addendums, if issued, for this project. **All addendums will be posted on the Department's Website, and are included by reference and become part of the contract documents**. It is the responsibility of the bidder to check the Website as needed. If there are Addendums issued, the final Addendum will be posted no later than the end of the day, two working days prior to the bid date.

NOTE: There is space provided on the CERTIFICATION page to insert each issued Addendum and the date you acknowledge receipt of the addendum. **Each Addendum number and date acknowledged must be submitted on the Certification page or your bid will be considered Non-responsive** and not considered for award.

MODIFICATIONS TO REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

The following modifications to the enclosed REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS (located elsewhere in this document) are effective January 18, 2009. Modifications are shown below. Old language is shown crossed out, new language is shown underlined. The full text is not shown, only portions that were modified.

V. STATEMENTS AND PAYROLLS

2. **Payrolls and Payroll Records:**

b. The payroll records shall contain the name, ~~social security number,~~ and ~~address~~ an individually identifying number for each employee (e.g., the last four digits of the employee's social security number) of each such employee . . .

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under ~~paragraph 2b of this Section V.~~ 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). ~~This~~ The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose ~~and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402.~~ from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the FHWA, if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the FHWA the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

d.

(1) that the payroll for the payroll period contains the information required to be ~~maintained under paragraph 2b of this Section V~~ provided under Sec. 5.5(a)(3)(i) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5,and that such information is correct and complete;

- end -

CONSTRUCTION ITEM NUMBERS

All construction pay items are assigned a six (6) digit number, shown as Item Number on the Plans and/or in the Special Provisions, and shall be interpreted in accordance with the following:

Standard Item Number:

The first three digits of the construction item numbers indicates the Section number as described in the Standard Specifications, and all applicable requirements of the Section shall remain effective unless otherwise modified by the Special Provisions. The last three digits of the construction item identifies the item by sequential number under that Section. Sequential numbers for all items covered under Standard Specifications range from 000 to 499. A comprehensive list of construction item numbers begins on page 421 of the Standard Specifications. Additions to this list will be made as required.

Special Provisions Item Number:

The first three digits of the construction items, covered under Special Provisions, indicates the applicable Section number of the Standard Specifications, and shall be governed fully by the requirements of the Special Provisions. The last three digit of the items covered under Special Provisions identifies the item by sequential number. Sequential numbers for Special Provision items, range from 500 to 999.

Examples

Standard Item Number - 202000 Excavation and Embankment

202 Indicates Section Number

000 Indicates Sequential Number

Special Provision Item Number - 202500 Grading and Reshaping Roadway

202 Indicates Section Number

500 Indicates Sequential Number

401502 - ASPHALT CEMENT COST ADJUSTMENT

For Sections 304, 401, 402, 403, 404, and 405, payments to the Contractor shall be adjusted to reflect increases or decreases in the Delaware Posted Asphalt Cement Price when compared to the Project Asphalt Cement Base Price, as defined in these Special Provisions.

The Delaware Posted Asphalt Cement Price will be issued monthly by the Department and will be the industry posted price for Asphalt Cement, F.O.B. Philadelphia, Pennsylvania.

The Project Asphalt Cement Base Price will be the anticipated Delaware Posted Asphalt Cement Price expected to be in effect at the time of receipt of bids.

All deviations of the Delaware Posted Asphalt Cement Price from the Project Asphalt Cement Base Price are eligible for cost adjustment. No minimum increases or decreases or corresponding percentages are required to qualify for cost adjustment.

Actual quantity of asphalt cement qualifying for any Asphalt Cement Cost Adjustment will be computed on the basis of weight tickets and asphalt percentage from the approved job mix formula.

For Recycled Hot-Mix the asphalt percentage eligible for cost adjustment shall be only the new asphalt cement added to the mix.

There shall be no separate payment per ton (metric ton) cost of asphalt cement. That cost shall be included in the various unit prices bid per ton (metric ton) for those bid items that contain asphalt cement (mentioned above).

The Asphalt cement cost adjustment will be calculated on grade PG 64-22 asphalt regardless of the actual grade of asphalt used. The Project Asphalt Cement Base Price for the project will be $618.33 per ton ($681.60 per metric ton).

If the Contractor exceeds the authorized allotted completion time, the price of asphalt cement on the last authorized allotted work day, shall be the prices used for cost adjustment during the time liquidated damages are assessed. However, if the industry posted price for asphalt cement goes down, the asphalt-cement cost shall be adjusted downward accordingly.

NOTE

Application of Asphalt Cement Cost Adjustment requirements as indicated above shall apply only to those contracts involving items related to bituminous base and pavements, and with bitumen, having a total of 1,000 tons (1,000 metric tons) or more of hot-mix bid quantity in case of Sections 401, 402 and 403; and 15,000 gallons (60 000 liters) or more in case of Sections 304, 404 and 405.

202502 - GRADING AND RESHAPING EXISTING SUBGRADE

Description:

This work consists of grading and reshaping existing subgrade which includes widening, grading, scarifying, reshaping and compacting the existing subgrade to the proposed typical section as described on the Plans; and includes, in case of removing the material, up to a maximum depth of 12" (300 mm) below the original ground throughout the full width of the typical section, if required or directed by the Engineer.

Construction Methods and Responsibilities:

The Contractor shall take particular care to waste and dispose of, away from the site all the material on each side, adjacent to, and contiguous with the existing subgrade that is unsuitable; such as grass, root mat, weeds, brush, shrubs, leaves, and/or any other types of vegetation, organic matter, and objectionable debris. Existing material of these types shall not be used for the improvement. Materials used for widening shall conform to the particular type of material shown on the Plans for each specific type of construction.

The subgrade shall be prepared in accordance with subsections 202.02 and 202.06 of the Standard Specifications.

Method of Measurement:

The quantity of grading and reshaping existing subgrade will be measured in square yards.

Materials removed under this item shall be excluded from the quantity Bid Item 202000 "Excavation and Embankment"

Basis of Payment:

The quantity of grading and reshaping existing subgrade will be paid for at the Contract price per square yard. Price and payment will constitute full compensation for performing all the work described in these Special Provisions, as noted on the Plans, and/or as directed by the Engineer, and includes, disposal and removal of excess or unsuitable materials, widening, grading, reshaping and compacting the subgrade and for all labor, tools, equipment, and incidentals necessary to complete the item.

11/16/10

202532 – REMOVAL OF CONTAMINATED MATERIAL

Description:

Contaminated Material is defined as solids or liquids (including soil) potentially contaminated with a hazardous substance, requiring special handling and/or disposal per state or federal regulation.

This work describes the excavation, stockpiling / storing, and loading contaminated materials resulting from project construction including utility and other types of excavation activities in accordance with the locations and notes on the Plans, and as directed by the Engineer or the Department's environmental representative. The Contractor will be notified of the Department's environmental representative at the pre-construction meeting.

Contaminated materials will be trucked from the stockpile / storage area by the Department for treatment / disposal.

Overview of Costs:

Potential contaminated solids may affect contractor's costs as follows;
Additional cost to normal excavation requirements:
-Cost of 8 mil plastic for placement under and over solid contaminated material,
-Maintaining the segregated contaminated solids staging area.
Reduced cost to normal excavation requirements:
-Not required to, or charged for, transport of contaminated material from site.
-Not required to, or charged for, disposal of contaminated soil.
Potential contaminated liquids will affect contractor’s cost as follows;
Additional cost to normal excavation requirements:
-None
Reduced cost to normal excavation requirements:
-None

Construction Methods and Responsibilities:

Contractor's Responsibilities for potential contaminated solids:
The Contractor shall be responsible for providing the appropriate equipment and personnel necessary to excavate, stage, and load contaminated material for off-site disposal, as identified from previous site environmental investigations or identified during construction activities. The work will be performed in accordance with the procedures described in the site specific "Contaminated Material and Water Removal Work Plan" prepared by the Department's environmental representative. The Contractor shall adhere to applicable Occupational Safety and Health standards, Guidelines and/or Laws. This will include compliance with 29 CFR Part 1910.

After award of the Contract, the Contractor shall immediately be responsible for notifying the Department's HAZMAT Coordinator's office (302-760-2108) for scheduling coordination with the environmental representative. The contractor shall submit a proposed schedule of work to the Department for review and approval prior to any commencement of work on this site. The Contractor is required to perform to a high standard of workmanship to assure protection of workers, local water supplies, and the environment. The Contractor shall coordinate with the utility companies prior to excavation. The Department's environmental representative shall be present during all phases of work associated with the excavation and removal of potentially contaminated material. Payment will not be made for any work done when a Department approved Inspector or environmental representative is not present to provide environmental oversight.

Specific tasks to be performed by the Contractor will include excavating soil per the project specifications. The Contractor will segregate "contaminated" soil as designated by the Department or their environmental representative, from "clean" soil and place the "contaminated" soil in a designated on-site staging area constructed by the Contractor. At a minimum the staging area needs to be lined with 8-mil plastic and a berm constructed to minimize storm water run-off. The "contaminated" soil will need to be covered by the Contractor at the end of each work day. The Contractor will be responsible for loading contaminated soil onto trucks arranged by the Department's environmental representative on the days the contaminated soil is shipped off-site to a licensed disposal/treatment facility. The Contractor will backfill and compact the excavated area(s) according to the project specifications and payment will be made under that item of the Contract.

Department's Responsibilities

The Department is responsible for providing and paying; the environmental representative; the transportation of contaminated material for disposal; and the disposal of contaminated material.

The Department's environmental representative shall be responsible for developing and submitting a "Contaminated Material and Water Removal Work Plan" to the Department so it is included in the project specifications prior to going out for bid. The work plan will identify; the procedures to be used to excavate and stage the contaminated material; the licensed treatment/disposal facility where the Department will ship the contaminated material; the method the material will be transported to the treatment/disposal facility; and any additional health and safety requirements for site personnel.

The Department's environmental representative will conduct a health and safety briefing prior to commencement of activities on the sites to insure an understanding of all applicable standards, guidelines, laws, procedures, etc. consistent with the successful completion of this type of activity. The Department's environmental representative will conduct air monitoring during any excavation activities at the site to identify and mitigate fire, explosion and vapor hazards.

The Department's environmental representative shall coordinate the excavation activities with all applicable local, state, and federal environmental regulatory agencies. The Department's environmental representative will also oversee the excavation, removal and treatment/disposal of the material in the designated area(s) and perform such tests as field screening for soil contamination utilizing vapor monitoring techniques and collect soil samples for laboratory analysis to meet the requirements of the treatment/disposal facility, DNREC and/or the USEPA. The Department's environmental representative's personnel will subcontract with the disposal/treatment facility to provide transportation and disposal/treatment of all contaminated materials to be removed as part of the project. The Department's environmental representative is responsible for measuring the quantity of contaminated material removed, via certified scale weights, for the Department's records.

Method of Measurement:

The quantity of contaminated material will be measured as the actual number of tons removed, by others, from the site's contaminated material stockpile area, as measured by DelDOT's environmental representative.

Basis of Payment:

The Bid Item 202560 "Contaminated Material" will be paid for at the Contract unit price per ton, complete, accepted, which price will be full compensation for special handling, constructing and maintaining the segregated soil staging area, placement of the contaminated soil in the staging area, providing plastic and daily covering of the segregated soil staging area, and loading of contaminated

soil for removal by the Department, and for all labor, equipment, tools, and incidentals required to complete the work

Excavation of these materials will be paid for at the Contract unit price per cubic yard under Bid Item 202000 “Excavation and Embankment”.

This item is a contingency item and the Department reserves the right to delete from the Contract. The Contractor shall make no claims for additional compensation because of deletion of the item.

11/15/10

202536 - SITE SAFETY PLAN

Description:

This work consists of developing and implementing a Site-specific Safety Plan (hereinafter referred as SSP) for work adjacent to railroads and excavation or handling of hazardous materials. This may include the release of airborne lead when dismantling, cleaning, or cutting existing steel structures.

Also refer to the following Special Provisions:

202560 "Contaminated Material"
203500 "Hydraulic Excavation"
605533 "Cleaning Existing Steel Structures, Hazardous Base"
763502 "Maintenance of Railroad Traffic"
763624 "Scour Protection"
763635 "Railroad Access Permits".

SSP Development:

The SSP shall describe the safety procedures, practices, and equipment to be implemented to protect affected personnel and the public from the potential hazards associated with the site-specific tasks to be performed. The SSP shall provide guidance for Contractor personnel concerning the potential hazards.

The SSP shall address the potential safety hazards associated with each phase of the operations and shall include the requirements and procedures to protect the workers. The SSP shall at a minimum include the following items:

- Site activities. The SSP shall describe the deconstruction activities to be performed. This section shall detail the construction methods, the personnel involved, and the equipment required.

- Personal Protective Equipment (PPE). The SSP shall describe any PPE to be used during de-construction activities. A description shall be included detailing when and what type of PPE shall be employed during the de-construction activities, particularly during the de-construction of the mse walls. Any employee training required to properly use the PPE shall be described.

- Site control measures. The SSP shall detail the site control measures to be employed during the de-construction activities. This shall include a description of perimeter controls to be employed to minimize the risks from the potential hazards. In particular, the plan shall outline how potentially contaminated materials will be visually identified, steps to be taken once identified, hazards adjacent to railroad, use of swing equipment, separation devices, authority hierarchy including railroad flaggers, railroad personnel, DelDOT personnel, and DelDOT's Environmental Consultant.

Control and Inspection:

The SSP shall be submitted to the Engineer for the Department's approval at least 7 calendar days prior to initiating construction work at the site. No activities shall begin prior to receiving the Department's approval of the SSP.

Method of Measurement:

The quantity of Site Safety Plan will not be measured.

Basis of Payment:

The Site Safety Plan will be paid for at the Contract lump sum. Price and payment will constitute full compensation for all labor, tools, and equipment to develop and implement the SSP, removal and replacement of perimeter controls around the top of each embankments each day, furnishing placing and removing any perimeter controls, signing, etc around the perimeter at the base of each embankment and any installing, maintaining and removing any other controls as depicted in the approved SSP. Necessary modifications to the SSP resulting from DelDOT's review will be made by the Contractor at no additional cost to DelDOT.

11/16/10

202563 – DEFORMATION MONITORING POINT
202564 – FIELD SURVEY AND DATA REDUCTION FOR DEFORMATION MONITORING POINT
202565 – TILT PLATES
202566 – FIELD READING AND DATA REDUCTION FOR TILT PLATES
202567 – CRACK GAUGES
202568 – FIELD READING AND PLOTTING FOR CRACK GAUGES

Description:

A. The work of this section includes, but is not limited to, furnishing, installing, initializing, protecting, maintaining, recording and reporting instrumentation required to observe the horizontal deformation of micropile soldier piles for the Support of Excavation (SOE), ground, utilities and track movements, and rotational movement of the catenary structures during construction.

B. Contractor shall not install instrumentation until instrumentation submittals are reviewed by the Engineer.

C. The Contractor shall provide, install, operate or use, and maintain instrumentation to monitor deformation of tracks in areas surrounding the excavations and shall provide, install, operate or use and maintain instrumentation to monitor horizontal movements of micropile soldier piles of the SOE, adjacent properties, structures, and utilities.

D. The Contractor shall submit a plan to the Engineer for the monitoring of horizontal movements of micropile soldier piles for SOE, adjacent properties, and monitoring deformation of tracks, utilities, structures, pavements, sidewalks and instrumentation to monitor the rotational movement of caternary structures. This plan shall also include a schedule of monitoring and forms for the recording of the monitoring data.

E. For the purposes of this Contract the potential zone of influence is considered to be within a slope of 2 horizontal to 1 vertical as measured perpendicularly from each side of the excavation from a point two feet below the bottom of each edge of the excavation into soil. Monitoring of potential ground movements shall be performed on properties, structures, catenary poles, utilities, and tracks that fall within this zone. Utilities within this zone shall be test pitted and settlement points installed to monitor the settlements of the utility.

F. The Contractor is to place surface deformation monitoring points, horizontal movement monitoring points, crack monitors and tilt plates closest to the excavation upon approval by the Department. Locations may need to be added as directed by the Engineer.

Submittals

A. Settlement, lateral movement surveying, and tilt plate monitoring plan for review prior to construction. The plan shall identify the detailed location of deformation monitoring points,

horizontal movement monitoring points, tilt plates, reference deep benchmarks, survey schedules and procedures and reporting formats.

B. Detail showing actual deformation monitoring points, horizontal monitoring points and tilt plates at each location.

C. Description of the surveying equipment and readout equipments to be used including accuracy.

D. Instrumentation Layout and Installation Details: Within two days of installing each instrument, Contractor shall submit an installation record sheet including appropriate items from the following list.

1. Project name.
2. Contract name and number.
3. Instrument type and number.
4. Planned location in horizontal position and elevation.
5. Planned orientation.
6. Personnel responsible for installation.
7. Date and time of start and completion.
8. Weather conditions at the time of installation.
9. Notes of importance on the installation including problems encountered, delays, unusual features of the installation, and details of any events that may have a bearing on instrument behavior.

Materials:

Instrumentation may consist of, but is not limited to, optically monitored laser reflectors and ground settlement markers, shallow subsurface settlement markers, deep subsurface settlement markers, and tiltplates.

Description of Instruments

A. Deformation Monitoring Points (DMP's) consist of measuring points placed on a wall or on a horizontal surface of existing buildings, SOE or other structure. This may be a PK nail, expansion anchor bolt, laser reflector and other method approved by the Engineer.

B. Deep benchmarks consist of an outer casing consisting of 6-inch diameter PVC of at least 4 feet length into dense soil and an inner steel rod/pipe installed in cast-in-place concrete or a standard metal survey cap grouted at least 4 ft into dense soil or bedrock to provide a stable benchmark for survey operations.

C. Survey Instruments used for vertical deformation monitoring shall have a minimum accuracy of plus or minus 0.002 ft (standard deviation for 3300-feet of double run leveling) and a minimum setting accuracy of plus or minus 1.0 arc seconds. Leveling rods shall be non-telescopic in design (i.e. "Chicago" style leveling rod. A bull's eye bubble shall be used to plumb the leveling rod. Use of fiberglass rods needs approval of Engineer prior to use.

D. The crack gauge consists of two overlapping acrylic plates. One plate is white with a black millimeter grid, while the other is transparent with red crosshairs centered over the grid. Once the Crack Monitor is in position across a crack, the crosshairs shift vertically or horizontally on the grid if movement occurs, so that anyone can easily see and track crack movement. The crack gauges are used to monitor the diagonal wall crack along the existing structures as directed.

1. Provide crack monitoring gauge as manufactured by Avongard Products USA, Ltd, or approved equivalent.

2. Crack monitoring gauge should consist of two overlapping acrylic plates. One plate is white with a black millimeter grid, while the other is transparent with red crosshairs centered over the grid.

3. Provide accessories, consisting of tools and materials for attaching monitoring gauges to existing retaining wall.

E. Provide tilt plates and tilt meters as manufactured by Slope Indicator Company, RST Instruments, Geokon or approved equivalent. The tilt plate shall be compatible with the tilt meter. The tilt plate consists of a bronze disc about 5.5 inches (140mm) in diameter which is to be firmly fixed to the base of the structure. The disc shall have four pegs extending to a common flat plane upon which a tilt meter or electronic readout box can be placed. A horizontally mounted tilt plate allows tilt readings in two planes that are 90 degrees apart. A vertically mounted tilt plate allows tilt reading in one plane. The tilt meter shall consist of a sensor with the following specifications:

Minimum Range:	±15°
Minimum Resolution:	±10 arc second
Minimum Repeatability:	±40 arc second

Construction Methods:

A. The Contractor shall label each instrument with the instrument number. Numbers shall be unique for the project. The label shall be permanent and visible without having to remove protective measures. The reference mark and orientation required for certain instrument types shall be clearly marked on the instrument in a permanent manner.

B. Deformation monitoring by surveying methods shall conform to the following requirements:

1. For vertical deformation monitoring, runs shall be performed by a single run beginning and ending on two different deep benchmarks. Deformation monitoring points shall be used as turning points or as intermediate foresights from two different turning points, allowing elevations to be adjusted and eliminating significant observational errors. The maximum length of line of sight shall be 150 feet, and the imbalance between backsight and foresight shall not exceed 30 feet. Allowable level loop misclosure shall not exceed ±0.033 times the square root of M feet (where M is the distance of the level run in miles) for a single run between two deep benchmarks. A formal initial reading on a deformation monitoring point will consist of the average of three elevations, from three independent level runs, which meet the closure specified herein. Elevations established subsequent to a formal initial reading shall be determined by a single run as specified herein. The least count (without estimation) of the rod and level combination shall read to 0.001-ft or less such that the accuracy of an elevation measurement shall be ±0.002-ft (at 95 percent level of confidence).

2. For horizontal deformation monitoring if a theodolite is used, the direction measurements shall be made in two sets of direct and reverse pointings, changing the circle setting by 90 degrees between sets. Reduced directions shall be rejected if they deviate from the mean by more than 5 arc seconds. The theodolite shall be plumbed over the occupied point by a high precision optical plummet or mechanical centering device. Each reading shall be referenced to stable horizontal control points. Reading accuracy shall be ±0.002 foot.

C. The tilt plate shall be installed about 5-ft above the base of the catenary structure. A quick setting epoxy cement or equivalent bonding agent shall be used to affix the tilt plate to the mounting surface. The tilt plate shall be vertically plumb and aligned so that the tilt meter reference axes are vertical and horizontal. Prior to final acceptance of the work, the Contractor shall remove the tilt plates and patch or repair the structure to the satisfaction of the Engineer.

D. The crack-monitoring gauge should be installed using anchors, bolts, screws, or epoxy adhesive. Make sure the gauge should be firmly attached on the structure during the entire proposed construction. Note location of crack gauge on crack progress sheet. Prior to final acceptance of the work, the Contractor shall remove the crack gauges and patch or repair the structure to the satisfaction of the Engineer.

E. Contractor's data shall be recorded in U.S. customary units, such as feet, inches, pounds.

F. The Contractor's instrumentation survey personnel and the Engineer shall meet at least once per week following the start of instrument monitoring installation to examine data, resolve any incompatibilities, and discuss any issues associated with the monitoring programs.

G. All data submitted by the Contractor shall be of the following form:

1. Raw and reduced data shall be on summary tables in printed tabular format on 8-1/2 inch x 11 inch sheets of paper.

2. Reduced data for up to 8 like instruments that are located in the same geographical area shall be plotted on the same plot. This requirement shall apply to deformation monitoring points, settlement platforms and tilt plate rotational monitoring. Each plot shall be submitted on an 8-1/2 inch x 11 inch sheet and shall contain a key plan indicating the approximate locations of the instruments plotted.

3. Plots of deformation data at deformation monitoring points shall show absolute vertical deformation versus time or absolute horizontal deformation versus time. If the Contractor plots Contractor's data to show angular distortion between adjacent DMPs. Plots of distance monitoring data at adjacent DMPs shall show change with respect to the initial reading, versus time. If the Contractor plots Contractor's data to show horizontal strain between adjacent DMPs. Plots of settlement plate data shall show absolute vertical deformation versus time.

H. The Engineer reserves the right to approve the method of installation and maintenance of monitoring devices. Approval of the method of installation and maintenance of monitoring devices shall not relieve Contractor of the responsibility to install and maintain the instruments in conformance with the Specifications.

I. The Engineer shall be notified of monitoring devices that become damaged or inoperable within 12 hours of the time Contractor becomes aware of such conditions.

J. Damaged instrumentation shall be repaired or replaced at the expense of Contractor. The repair or replacement shall occur within one week of notification of damaged by the Engineer, unless otherwise specified.

K. The Contractor shall submit updated as-built instrument location plans to the Engineer. The location plans shall be reproducible composite plans of all installed instruments plotted on 11-inch by 17-inch or 24-inch by 36-inch sheets at a scale of 1 inch = 100 feet. The first plans shall be submitted within 20 workdays after completion of the first instrument installation, regardless of instrument type. Update plans shall be submitted every 4 calendar weeks. Updated plans need not be submitted for periods during which no instruments have been installed.

L. All raw data shall be submitted to the Engineer within 24-hrs of the readings. By the end of the first work day in each week, the Contractor shall submit to the Engineer a description of the work performed during the previous week and all reduced data and plots as described in Section G.

Qualifications of Instrumentation Survey Personnel

A. The person in responsible charge of the surveyors shall be a qualified surveyor registered in the State of Delaware with a minimum of four years of experience in construction monitoring/deformation measurements of the types and accuracies specified herein. The field survey party chief shall have a minimum of one year of experience in construction monitoring/deformation survey measurements of the types and accuracies specified herein.

B. The Contractor's instrumentation survey personnel shall include a qualified Geotechnical Instrumentation Engineer who is a registered Professional Engineer in the State of Delaware, who has a minimum of Bachelor of Science degree in Civil Engineering, who has at least 4 years of experience in installation and monitoring of the types of instruments specified herein and in interpreting instrumentation data.

C. The Contractor shall provide the Engineer, for his approval, a description of the applicable experience of such personnel. Approval of the personnel shall be received before commencing with the installation.

D. Contractor's instrumentation personnel and surveyors, including the geotechnical instrumentation engineer, the superintendent, the field survey party chief, and all other field and office personnel shall be subject to the approval of the Engineer.

Reading Frequency

A. Initial Readings:

Readings of each instrument shall be performed weekly for at least three weeks prior to mobilizing construction equipment to the project site.

B. Readings During Construction Phase:

- The crack gauges shall be monitored once a week.
- The DMPs shall be read twice daily (7-days a week).
- The tiltplates shall be read daily (7-days a week).

C. Final Readings:

Readings of each instrument shall be performed weekly for at least 1 month after the completion of construction or as directed by the Engineer

Limiting Values

A. Response Values may be adjusted by the Engineer as indicated by prevailing conditions or circumstance.

B. Threshold Level and Limiting Level:

The following table summarizes the Threshold and Limiting levels of deformation measurements of the types specified herein.

Instrumentation	Limits	
	Threshold	**Limiting**
Track Vertical and Horizontal Movement	0.01-ft	0.02-ft
Utility, Ground, SOE, Other Movement	0.02-ft	0.04-ft
Catenary Rotation during No Wind Condition	0.13-deg	0.25-deg

1. When monitoring data indicates the movements have exceeded Threshold Level, the Engineer shall be informed and the monitoring of the geotechnical instruments shall be monitored a minimum of twice per eight-hour work shift. This level of monitoring shall continue for a minimum of 14 calendar days and/or until no additional movements have been detected.

2. When monitoring data indicates the movements have exceeded Limiting Level, the Engineer shall be informed and the Engineer may stop work. During this work stoppage the Contractor shall prepare and submit to the Engineer his emergency plan to arrest the movements so that work can resume. During this work stoppage period no additional compensation will be due the Contractor. Construction will not be permitted to resume until the Contractor has implemented all remedial measures approved by the Engineer to arrest the movements.

When authorized by the Engineer, work will resume. The Engineer may require an increased monitoring effort to determine if the Contractor's remedial measures have been effective and have arrested the detected movements. These values may need to be adjusted based on visual observations of the structures.

Any damaged caused by these movements will be repaired by the Contractor at no charge to the Owner.

Method of Measurement:

A. The number of deep benchmarks including all materials, labor and incidentals to their installation will not be measured and will be incidental to the installation of the DMPs.

B. The number of DMPs measured will be the actual number of points set in place and maintained for the duration of construction. All laser reflectors, PK nails, or expansion bolts, and incidental items for the installation of the DMPs, and initial three readings will not be measured separately for payment. The costs will be considered incidental to this item.

C. All field surveys and data reduction for the DMPs during and after completion of construction will be measured for each survey reading performed.

D. The number of tilt plates measured will be the actual number of tilt plates set in place and maintained for the duration of construction. All tilt plates, readout units and incidental items for the installation of the tilt plates, initial three readings, and abandonment of tilt plates no longer required will not be measured separately for payment. The costs will be incidental to this item.

E. All field readings and data reduction for the tilt plates during and after completion of construction will be measured for each reading performed.

F. The number of crack gauges measured will be the actual number of gauges set in place and maintained for the duration of construction. All gauges and incidental items necessary for installation of the gauges, initial three readings and abandonment of gauges no longer required will not be measured separately for payment. These costs will be considered incidental to this item.

G. All field readings and plotting for crack gauges during and after completion of construction will be measured for each reading performed.

Basis of Payment:

A. DMPs will be paid under Bid Item 202563. DMPs will be paid for at the Contract unit price for Each, complete in place which price shall be full compensation for all materials, tools, labor and

work incidental thereto including all labor, tools, equipment, and necessary incidentals to complete the work.

B. Field Surveys and Data Reduction for DMPs will be paid under Bid Item 202564. All field surveys and data reduction for DMPs will be paid for at the Contract unit price for Each survey point which price shall be full compensation for all material, tools, labor, and work incidental thereto including all labor, tools, equipment, and necessary incidentals to complete the work.

C. Tilt Plates will be paid under Bid Item 202565. Tilt plates will be paid for at the Contract unit price for Each, complete in place which price shall be full compensation for all materials, tools, labor and work incidental thereto including all labor, tools, equipment, and necessary incidentals to complete the work.

D. Field Readings and data reduction for tilt plates will be paid under Bid Item 202566. All field readings and data reduction for tilt plates will be paid for at the Contract unit price for Each reading which price shall be full compensation for all material, tools, labor, and work incidental thereto including all labor, tools, equipment, and necessary incidentals to complete the work.

E. Crack gauges will be paid under Bid Item 202567. Crack Gauges will be paid for at the Contract unit price for Each, complete in place which price shall be full compensation for all materials, tools, labor and work incidental thereto including all labor, tools, equipment, and necessary incidentals to complete the work.

F. Field Reading and Plotting for Crack Gauges will be paid under Bid Item 202568. All field readings and plotting for crack gauges will be paid for at the Contract unit price for Each reading which price shall be full compensation for all material, tools, labor, and work incidental thereto including all labor, tools, equipment, and necessary incidentals to complete the work.

11/16/10

203500 – HYDRAULIC EXCAVATION

Description:

The work covered by this Section consists of furnishing labor, material, and equipment and performing the operations required for excavating streambed areas, dewatering, and disposal of excavated materials, defined herein and on the Contract Drawings for the scour protection in Little Mill Creek at the railroad bridges and Retaining Wall # 1.

The Contractor shall note the limited vertical and horizontal clearances available for this construction and the tidal influences at this site. As shown on the scour protection construction staging plans, the existing streambed will be removed using hydraulic excavation methods. The materials removed will be pumped into dewatering bags for drying and disposal. Refer to Appendix C "Soil Sample Analytical Results - Environmental and Waste Characterization" for expected characteristics of the excavated materials.

The following References are publications that form a part of this Section:

ASTM D 123	(1993a) Standard Terminology Relating to Textiles
ASTM D 422-63 (2002)	Test Methods for Particle-Size Analysis of Soils
ASTM D 2487-00	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 3786-01	Hydraulic Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Test Method
ASTM D 3884-01 (E01)	Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)
ASTM D 4354-99	Standard Practice of Sampling of Geosynthetics for Testing
ASTM D 4355-02	Deterioration of Geotextile from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 44991-99a	Water Permeability of Geotextiles by Permitivity
ASTM D 4533-91	(1996) Trapezoid tearing Strength of Geotextiles
ASTM D 4595-86	(2001) Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Method
ASTM D 4632-91	(2003) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751-99a	Determining Apparent Opening Size of a Geotextile
ASTM D 4759-02	Determining Specification Performance of Geosynthetics
ASTM D 4833-00E1	Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873-02	Identification, Storage, and Handling of Geotextiles
ASTM D 4884-96	(2003) Strength of Sewn or Thermally Bonded Seams of Geotextiles

Refer to Bid Item 763624 “Scour Protection” for additional requirements

Contractor Qualifications:

The Contractor installing the scour protection shall have satisfactorily completed geotextile bag and dewatering bag installation of similar scope and magnitude to this Contract and shall submit documentation indicating this experience to the Engineer a minimum of 60 days prior to the scheduled scour protection construction.

Pre-Construction Submittals:

Manufacturers' data for geotextile dewatering bags, pumps, and hydraulic excavation devices shall be submitted by the installation contractor a minimum of 60 days prior to scheduled delivery of the items for review by the Engineer. The information provided shall attest that the items meet the gradation, chemical, physical, and manufacturing requirements in these specifications. Submission shall include a sample of geotextile, grout filled geotextile bags, and sand backfill. The samples shall measure a minimum of 12 inches by 12 inches or 5 pounds.

Products Certificates: A written certificate of compliance from the material suppliers shall be submitted upon delivery of geotextile, articulating precast concrete revetment mats, and grout filled geotextile bags. The certificate shall state that the products shipped to the site meet or exceed the minimum requirements of these specifications.

Excavation Plan: The Contractor shall submit an Excavation Plan to the Engineer for approval a minimum of 30 days prior to the start of scour protection construction. As part of the Excavation Plan, the Contractor shall field verify the depth of excavation required for the scour protection installation by soundings or other method. Sounding shall be preformed on a 25' x 25' grid pattern and extend beyond the limits of the scour protection. The Excavation Plan shall indicate the proposed method of excavation of material from within the proposed limits of work as shown on the Contract Drawings, diver safety measures, pump capacities, dewatering requirement calculations, methods disposal of excavated materials and used dewatering bags, turbidity curtain control, and installation of grout filled bags under tidal influence.

Accident Prevention Plan: The Contractor shall be responsible for maintaining site safety in accordance with, at a minimum, DelDOT and OSHA requirements for all items related to the installation and construction of scour protection. The Contractor shall submit for approval prior to the start of work its plan for accident prevention. The Plan shall comply with all provisions of this Contract and shall emphasize the protection and safety of the general public using the adjacent areas. The Plan shall show details of any barricades, warning signs, and equipment the Contractor intends to use in the implementation of the Accident Prevention Plan.

Materials:

Dewatering Bag:

1. Fabric: The dewatering bag shall be constructed of a non-woven geotextile fabric conforming to the following properties:

Properties	Values	Test Method
Weight	10 oz/yd2 (min)	ASTM 0-3776
Tensile Strength	250 Ib (min)	ASTM 0-4632
Puncture Resistance	165 Ib (min)	ASTM 0-4833
Flow Rate	70 gallmin-ft2 (max)	ASTM 0-4491

Permitivity	1.3 sec^{-1} (max)	ASTM 0-4491
Bursting Strength	550 psi (min)	ASTM 0-3786
UV Resistance	70% (min)	ASTM 0-4355
AOS	150 micron (max)	ASTM 0-4751

1. Seams: The dewatering bag construction shall consist of double-sewn seams, to form a continuous surface except for the inlet opening. The seams shall have a minimum strength of 100 Ib/in, when tested in accordance with ASTM d-4884.

Inlet Opening: The dewatering bag shall have an inlet opening capable of accommodating at maximum a *4"* diameter hose. The opening shall be such that it can be sealed tightly around the effluent hose to prevent non-filtered water from escaping.

Drainage Net:

Nonwoven geotextile composed of polypropylene fibers for subsurface drainage, conforming to AASHTO M288, Class 2. Flow rate 110 gallons/minute/square foot

Mirafi 160N, as manufactured by TenCate Geosynthetics North American, 365 South Holland Drive, Pendergrass, GA 30567, telephone 706-693-2226, or approved equal.

Impervious Membrane:

Woven polyethylene fabric with polyethylene films laminated on both sides forming an imprevious monolithic sheet.

Mirafi NT100, as manufactured by TenCate Geosynthetics North American, 365 South Holland Drive, Pendergrass, GA 30567, telephone 706-693-2226, or approved equal

Construction Methods:

Amtrak Coordination: The Contractor shall coordinate with Amtrak to relocate any track materials that may be located within the area designated on the plans for scour protection geotextile dewatering bags (see Drawing MT-20).

Mobilization and Demobilization: The Contractor shall mobilize sufficient personnel and equipment at the work site to begin required operations at the site. Upon successful completion of the work required as specified herein, the Contractor shall remove all construction equipment, materials, supplies, and debris from the site.

Dewatering Bag Construction: Dewatering bags shall be placed at locations designated on the plans or as approved by then Engineer. The dewatering bags discharge pipe shall be tightly sealed at the inlet and the pumping rate shall not exceed the manufacturer recommendations. The dewatering effluent shall be discharged without causing any erosion between the dewatering bag and the outlet. The method of erosion control shall be approved by the Engineer.

Dewatering Bag Maintenance: When the dewatering bag cannot readily pass any more water as determined by the Engineer, a new dewatering bag shall be furnished and placed. The Contractor shall properly remove and dispose of the dewatering bag when it is replaced or when 'it is no longer needed. Additional straps may be necessary to safely transport the dewatering bag after it has been filled with sediment.

Dewatering Bag Performance Requirement: To be considered acceptable, the dewatering bag shall filter all effluent so that soil particles retained on a #100 sieve (150 microns) are captured in the bag and removed from the discharge water.

Utilizing divers or other underwater means, hydraulically excavate the existing stream bottom to the lines and grades as shown on the plans. Required excavation depths may be referenced to the existing railroad bridge girders. Tidal influence shall be incorporated into the contractor's operations and storm damage shall be repaired during each phase of the construction.

Phasing shall conform to the plans or to the approved excavation plan.

Submit verification of line and grade to the Engineer prior to the placement of geotextiles, grout bags, or the revetment mats. Obtain approval from the Engineer before proceeding with the next phase of construction.

Should the contractor excavate beyond the template shown on the plans, low areas shall be filled with sand meeting the requirements of Bid Item 756000 "Sand Backfill". Overexcavation will not be measured or paid for by the Department and will be the sole responsibility of the Contractor.

Method of Measurement:

The quantity of hydraulic excavation will be measured as the actual number of cubic yards of dewatered material removed from the site. The volume shall be computed by measuring the dewatering bags in accordance with Subsection 202.10.

Basis of Payment:

The Bid Item 203500 "Hydraulic Excavation" will be paid for at the Contract unit price per cubic yard, complete, accepted, which price will be full compensation for divers, excavating equipment, pumps, pumping; preparation of all plans; preparation of the dewatering area including grading, fabrics, dewatering bags, drainage nets, impervious membranes, disposal of excavated materials and dewatering materials, sediment control, and for all labor, equipment, tools, and incidentals required to complete the work, except as listed below:

Elements Paid for Separately:

Bid Item 269000 "Turbidity Curtain, Floating"
Bid Item 302005 "Graded Aggregate Base Course, Type B
Bid Item 302012 "Delaware No. 57 Stone"
Bid Item 601520 "Temporary Timber Mats"
Bid Item 602530 "Grout Repairs for Substructure"
Bid Item 602614 "Underwater Revetment Mattress"
Bid Item 602789 "Underwater Grout Filled Geotextile Bags"
Bid Item 712021 "Riprap, R-5"
Bid Item 712023 "Riprap, R-7"
Bid Item 713002 "Geotextile, Separation"
Bid Item 756000 "Sand"
Bid Item 763624 "Scour Protection"

11/16/10

207505 - SUPPORT OF EXCAVATION

Description:

This work includes designing, furnishing materials for and constructing Support of Excavation (SOE) consisting of micropile soldier piles secured in place with permanent tiebacks, and timber lagging for temporary lateral support. The work shall also include designing, furnishing, installing, and testing micropiles and permanent tiebacks, all in conformance with these Specifications and as shown on the Plans or directed by the Engineer. The terms "tiebacks" and "ground anchor" are used interchangeably in this Specification.

Micropile soldier piles for all SOE constructed for the bridge abutments and retaining wall RW A will be drilled micropiles cased for the entire length.

Submittals

Product Data. For each type of product specified.

Micropile Standard. Comply with Special Provision, Section 619520-619521, Micropiles for the design, construction and testing of micropiles.

Shop Drawings. The construction shop drawings design of micropiles and the design of the tieback and associated structure shall be prepared, stamped, and signed by an Engineer licensed as a Professional Engineer in the State of Delaware. This work shall be submitted at least 60-days prior to installing the first tieback prior to proceeding with the work. Working drawings shall include but not limited to:

(a) Detailed Sequence of Construction.

(b) Ground anchor schedule, including tieback number, locations, angles of declination/splay, loads, bonded/unbonded length, etc.

(c) Ground anchor details and materials, including centralizers and corrosion protection Proposed sequence for tieback installation.

(d) Lagging, including sizes, materials, and attachment details.

(e) Micropile soldier pile schedule, details, and materials.

(f) Certificates of compliance for all materials.

(g) Detail of attachment of tieback head to waler.

(h) Other materials, details, fabricated items, tieback connections and procedures pertinent to the design and construction of the top-down walls.

(i) Design calculations, citing all references used. Calculations shall be signed and stamped by a Delaware-registered Professional Engineer.

(j) Details of prefabricated sheet drains and weephole pipes.

The following information shall also be submitted to the Engineer for review not less than 30-days prior to the commencement of the tieback installation:

(k) Stressing bar or strand manufacturer's mill test reports for the tiebacks.

(l) Applicable literature from cement grout suppliers giving details on setting times as a function of temperature, strength gain with time, and recommended storage, mixing, and placement procedures.

(m) Applicable manufacturer certification and/or literature for anchorage fitting and accessories.

(n) Detailed description of the proposed procedures, including specific makes and models of equipment to be used for drilling, placing, grouting, tensioning, and locking off tiebacks.

(o) Detailed description of proposed procedures and applicable manufacturer's literature for the equipment to be used for testing, tiebacks including but not limited to the following:

1. Diagrams showing the arrangement of the testing equipment relative to the tieback and anchorage hardware.
2. The method for locking off the required transfer load.
3. Calibration data for the system of jack and gauges.
4. The proposed equipment set ups for monitoring elongation during tests of tiebacks.

During grouting operations, the following data shall be recorded by the Contractor and submitted to the Engineer:

(p) Type of mixer and grout pump.

(q) Type of cement.

(r) Water/Cement ratio.

(s) Types of additives and their concentrations in mix.

(t) Grout injection pressure.

(u) Test sample strength.

(v) Volume of grout placed.

The Contractor shall also submit a report to the Engineer within 20-days after completion of the tieback work. The report shall contain as-built drawings showing the locations, inclinations, and horizontal alignments of the tiebacks, total tieback lengths, stressing lengths and bond lengths.

Pile Installation Records. Contractor shall retain and submit pile drilling records for all micropiles and the drilling rate and resistance of augured holes.

A record shall be kept on an approved form for each micropile soldier pile of at least the following information:

a. Pile number, location, top and bottom elevations of micropiles.

b. Final location of pile axis and variation from design location.

c. Pile plumbness.

d. Micropile diameter.

e. Date and time of start and completion of pile installation or auguring.

f. Elevation of water table encountered.

g. Volume of concrete and method of placement.

Proof and Performance Testing. Submit results in tabular and graphical formats within 48 hours of completion of the test. Submission is to include evaluation by Contractor's Engineer stating the adequacy of the test and that the anchor test complied with or did not comply with these special provisions.

Design Mixes. For each class of concrete. Include revised mix proportions when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

Laboratory Test Reports. For evaluation of concrete materials and mix design test.

Welding Certificates. Copies of certificates indicating compliance of welding procedures and personnel with requirements in "Quality Assurance" article.

Qualification Data. For firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Resumes of including a list of at least five projects completed within the last five years with project names of similar scope and complexity and addresses, names and addresses of engineer and owners, and other information specified.

Schedule. Provide detailed sequence of construction. Detail coordination with other trades as well as access, as specified.

Record drawings at Project closeout.

Quality Assurance

Personnel Qualifications. All responsible personnel, including designers, testing staff, engineers, and field supervisors shall comply with Special Provision, Section 619520-619521, Micropiles and these qualifications described in this section. The permanent tieback anchors shall be designed, tested, and installed by a qualified specialty contractor approved by the Engineer, who for the past five years has been continuously and primarily engaged in tieback work and has completed five projects within the last five years that are similar size, scope, and complexity to that required by the Contract. Further, the Contractor's foreman and drill operators shall have at least three years experience installing permanent tiebacks. The Geotechnical Engineer shall have at least five years experience as a geotechnical engineer and shall submit a resume describing at least five projects of similar size, scope, and complexity with references. A list of projects with references completed in the last five years and resumes of both design and field personnel to be used on this project shall be submitted to the Engineer for approval. For each project listed include name of client contract, address and telephone number, location of project, contract value and actual and scheduled completion dates.

The Department may suspend work if substitutions in personnel are made.

Survey Work. Engage a registered surveyor or licensed Professional Engineer to perform surveys, layouts, and measurements for micropile soldier piles and tiebacks. Record actual measurements of each micropile soldier pile's location, bottom and top elevations, deviations from specified tolerances, and other specified data.

(a) Record and maintain information pertinent to each micropile soldier pile and cooperate with Owner's testing and inspecting agency to provide data for required reports.

Testing Agency Qualifications. Qualify and engage an independent testing agency with the experience and capability to conduct testing without delaying the work.

(a) The Contractor shall employ the services of a qualified geotechnical engineering and testing firm for inspection and testing for installation of micropile soldier piles, tiebacks, and concrete fascia. The geotechnical engineering firm's work shall be performed under the supervision of a Professional Engineer registered in Delaware, have a demonstrated record of experience with similar installations, and shall be approved by the Owner's representative prior to beginning the work.

Welding Standards. Qualify welding procedures and welding personnel to perform the welding processes for this project to the following AWS Standards:

(a) AWS D1.1, "Structural Welding Code - Steel."

(b) AWS D1.4, "Structural Welding Code - Reinforcing Steel."

Preinstallation Conference. Conduct meeting at project site to coordinate schedule, procedures, and methods. This meeting shall also be attended by the Contractor's project manager, field supervisor, tieback designer, tieback installer, testing agency, Owner's Representative, as well as representatives of the Designer.

Project Conditions

Existing Utilities. Locate existing underground utilities before excavating or drilling. If utilities are to remain in place, provide protection from damage during drilling operations.

(a) Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult Owner's representative immediately for directions as to procedure. Cooperate with Owner and utility companies in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

Site Information. Geotechnical borings have been performed for this project and are provided for information only. Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor.

(a) Make additional test borings and conduct other exploratory operations as necessary. All additional work shall be coordinated with and meet the requirements of the Department, as well as other authorities having jurisdiction. This work is considered incidental to the construction of the temporary SOE.

The geotechnical borings performed for the Owner are included in the project plans.

Materials

Structural Steel	ASTM A 709, Grade 50
Reinforcement	Section 603
Concrete	Section 602
Water	AASHTO T 26
Drain Pipe	ASTM D 1785
Bolts	ASTM A 325
Nuts	ASTM A 194
Washers	ASTM F 436

Anchors/Tiebacks. The anchor grout shall be made of ASTM C 150, Type II Portland cement and potable water, with a water-cement ratio not exceeding 0.45. The grout shall have a minimum compressive strength of 3,500 psi in seven days. All anchor wall and tieback components shall be

designed for a minimum service life of 75-years. Anchors shall be designed for a minimum factor of safety of 2.5.

Bentonite or mineral slurry shall consist of a stable suspension of powdered bentonite conforming to American Petroleum Institute Standard 13A, and natural silts and clays in water.

Tieback tendons shall be fabricated from single or multiple elements of the following:

(a) Steel bars conforming to ASTM A 722.

(b) Seven-wire strand conforming to ASTM A 416.

(c) Compact seven-wire strands conforming to ASTM A 779.

Spaces and centralizers shall be fabricated from material which is not detrimental to the prestressing steel or the concrete. Wood centralizers shall not be used. The centralizer shall be able to support the tendon in the drill hole and position the tendon so a minimum of 0.5-inch of grout cover is provided. The centralizers and spacers shall permit the free flow of grout around the tendon.

Smooth polyethylene (PE) tubes used only for bond breakers may be made from low or medium density plastic. Smooth polypropylene (PP) tubes used for sheaths and bond breakers shall be made from Grade II 26500 D resins conforming to ASTM D 4101. The plastic material shall be resistant to aging by ultraviolet light.

Corrosion inhibitor shall remain ductile and free from cracks and shall not become fluid over the anticipated range of temperatures encountered during fabrication, transport, storage, of while in service. The inhibitor shall be impervious to moisture and air and shall be a self-healing film and displace water. The corrosion inhibitor shall have a reserve alkalinity for long-term acid neutralization. The chlorides, nitrates, and sulfides present in the inhibitor shall not exceed the following limits:

(a) Chloride - 10 ppm as determined by ASTM D 512.

(b) Nitrates - 10 ppm as determined by ASTM D 3867.

(c) Sulfides - 10 ppm as determined by ALPHA, Test Methods, Sulfides in Water.

Trumpets: Steel trumpets shall be made from pipe or tube conforming to ASTM A 53 for pipe and ASTM A 500 for tubing. Polyvinyl chloride (PVC) trumpets shall not be used.

Lagging: The wall lagging shall be structural grade timber, having a minimum allowable flexural stress of 1,000 psi. and full dimension thickness shown on the plans.

Sequence of Construction

The walls under this item shall be constructed from the top down. The Contractor shall include a detailed sequence of construction including coordination with other trades, with the working drawing submittal. Include estimated duration of all procedures in working days and calendar days.

(a) Install micropile soldier piles.

(b) Excavate in front of wall, installing lagging and tiebacks as excavation progresses.

(c) Tiebacks, shall be installed as soon as practicable as excavation proceeds. Tiebacks shall be installed, load tested, locked off, and accepted before excavation proceeds any more than 1 feet below tieback level.

Micropile Soldier Piles

The micropile soldier piles shall be installed and supported so that it will remain with a vertical tolerance of 3 inches per 25 feet of length. Micropile soldier piles, where specified, shall be extended to the minimum depth shown on the Working Drawings. Pile cut off elevations shall be within 2-inches of plan elevation.

Tiebacks

Tieback anchors shall be installed in conformance with this section at each level and to the maximum computed design load to be encountered at that level. The installation of tiebacks shall be scheduled such that both the calculated and actual deflection in the wall does not exceed 0.5-inch. Tieback anchors shall be loaded immediately after developing required grout strength, but before excavation has progressed more than 1 feet below the bottom of the anchor row. Fasteners and drainage material shall be installed as indicated on the approved working drawings and approved by the Engineer.

The Contractor shall select the tieback type and shall determine the anchor length and the tieback angle so that the anchor will maintain a minimum of 2 feet clear from adjacent property and utility or other structures. The tiebacks shall also clear any existing structure, existing utilities, and other latent structures to remain. The Contractor shall be responsible for installing and testing tiebacks that will develop the tieback design load indicated on the working drawings in conformance with the "Tieback Installation and Testing" section of this Specification. The Contractor is cautioned that the available right-of-way may be limited, requiring specialized design and construction (larger diameters, multi-stage grouting, etc.) to achieve the required capacities.

The Contractor shall be responsible for angling tiebacks to avoid obstructions, including, but not limited to, foundations and existing and proposed utilities. The tieback orientation and connection details shall not induce unbalanced torsion in the micropile soldier piles.

Safety factors for all components and for overall stability shall be as indicated, as well as theoretical elongation of each anchor.

The tieback anchors shall have a minimum bond length of 15 feet and a minimum unbonded length of 15 feet, regardless of anchor type. The unbonded length shall be sufficient to place the anchor in material which would be unaffected by movement of the structure.

The tieback tendon shall be sized so that the design load does not exceed 60 percent of the guaranteed ultimate tensile strength of the tendon and the maximum load does not exceed 80 percent of the guaranteed ultimate tensile strength of the tendon.

The bearing plate shall be fabricated from steel plate conforming to the requirements herein and sized so the bending stress in the plate does not exceed 0.75 times the yield strength of the steel at the tieback design load or 0.95 times the yield strength of the steel at the maximum tieback test load.

Anchorages shall be capable of developing 95 percent of the guaranteed minimum ultimate tensile strength of the prestressing steel tendon.

The design for the length of the bonded zone shall be as specified in FHWA Manual No. FHWA-RD-97-130 and FHWA IF-99-015. The capacity of each anchor will be verified by testing before accepting the anchor. Only Class I encapsulated corrosion protected anchors as per FHWA Manual FHWA-IF-99-015 shall be provided for the permanent top-down walls.

Fabrication. Tendons may be either shop or field fabricated. They shall be handled and stored in a manner as to avoid damage or corrosion. Damage to the prestressing steel as a result of abrasions, cuts, nicks, welds, and weld splatter will be cause for rejection by the Engineer. Prestressing steel

shall be protected form dirt, rust, or deleterious substances. A light coating of rust on the steel is acceptable. If heavy corrosion or pitting is noted, the Engineer will reject the affected tendons. The Contractor shall replace the rejected tendons at no additional cost to the Authority.

Centralizers shall be securely attached to the tendon in the anchor length only and their spacing shall not exceed 10 feet. In addition, the lowest centralizer shall be located a maximum of 5 feet from the bottom of the anchor length. The minimum unbonded length of the tendon and the maximum anchor length shall not be less than that shown on the approved working drawings.

The unbonded length of the tendon shall be sheathed with a plastic tube conforming to the requirements herein. The sheath is used to provide corrosion protection and shall have a minimum wall thickness of 40 mils. The annular space between the tendon and sheath shall be completely filled with a corrosion inhibitor conforming to the requirements herein. The ends of pulled-on sheaths shall be sealed with ultra-high molecular-weight PE tape or heat-shrinkable tubing. The ends of extruded sheaths do not require a separate sealing means. This sheath can also function as the bond breaker.

A steel trumpet shall be used to provide a transition from the bearing plate to the corrosion protection over the unbonded length. One end of the trumpet shall be attached to the bearing plate and a tight-fitting seal between the trumpet and the unbonded length protection shall be provided at the other end. Corrosion inhibitor or cement grout shall be used to fill the trumpet. The trumpet shall have an inside diameter equal to or larger than the hole in the bearing plate furnished by the tendon supplier. The trumpet shall be long enough to accommodate movements of the structure during testing and stressing.

For strand tendons, the Contractor shall consult the tendon supplier to determine the minimum length trumpet required to make a transition from the diameter of the tendon in the unbonded length to the diameter of the tendon at the anchor head. A watertight seal shall be provided between the trumpet and the unbonded length corrosion protection. If grout is used to fill the trumpet, then the seal is temporary and it acts as a grout form. If corrosion inhibitor is used to fill the trumpet, then the seal is permanent and it shall be fabricated from Buna-N synthetic rubber or other as approved by the Engineer.

The bearing plate, anchor head, and wedges, or anchor nut shall be electrically insulated from the structure. Prestressing steel couplers shall be capable of developing 100 percent of the guaranteed minimum ultimate tensile strength of the prestressing steel and shall only be used with the approval of the Engineer.

Installation. The grouting equipment shall include a mixer capable of producing a grout free of lumps and undispersed cement. A positive displacement grout pump shall be used. The pump shall be equipped with a pressure gauge to monitor grout pressures at the pump. The pressure gauge shall be capable of measuring pressures of at least 150 psi or twice that of actual grout pressures used by the Contractor. The grouting equipment shall be sized to enable the tieback to be grouted in one continuous operation. Mixing and storage times shall not cause excessive temperature to build in the grout. The mixer shall be capable of continuously agitating the grout.

The Contractor shall select the drilling method and the grouting procedure used for the installation of the tieback. The minimum drill hole size is 4 inches for a bar tendon and 6.5 inches for up to seven strand tendons. The installation of micropiles and tiebacks shall be cased for the entire length during drilling with the casing advancing with the drill bit. Water shall not be used during any drilling operation. The casing shall be extracted only during or after the grouting operation. The drill hole shall be located within 3 inches of the desired location. The tie back angle shall be within plus or minus 3 degrees of that shown on the approved working drawings. Closer tolerances may be required where tiebacks will be installed close to existing facilities or structures.

The Contractor shall use care in handling and storing the tendons at the site. Prior to inserting a tendon in the drill hole, the Contractor shall examine the tendon for damage. If the sheathing has been damaged, it can be repaired with ultra-high molecular-weight PE tape. The tape should be spirally wound around the tendon so as to completely seal the damaged area. The pitch of the spiral shall ensure a double thickness at all points.

The anchor grout shall be injected from the lowest point of the tieback. The grout may be placed using grout tubes, casing, or drill rods. The grout may be placed before or after insertion of the tendon. The quantity of the grout and the grout pressures shall be recorded. The grout pressures and grout takes shall be controlled to prevent excessive heave. The Contractor shall prevent the grout column from contacting the wall or the trumpet. After stressing the tieback, the void at the top of the unbonded length shall be filled with grout or grease. The tieback shall remain undisturbed for at least 72 hours or until the grout has reached a cube strength of 2,500 psi, whichever occurs later. If grout loss from the drilled hole exceeds three times the volume of the annular space between the drilled hole and the tieback, then tieback installation shall be discontinued and the tendon removed from the hole and cleaned. The Contractor shall fully pressure grout the drilled hole with cement grout at a pressure of at least 5-psi above hydrostatic pressure, redrill the hole 24-hours after the grout sets, and reinstall the tieback as described herein above. Grout mixes and injection pressures for the pressure grouting shall be determined by the Contractor and approved by the Engineer.

Tieback Testing

Performance Testing. For each structure, five (5) percent or at least three tiebacks shall be performance tested. At least one tieback per row shall be performance tested. The Engineer shall approve the anchors to be tested. All testing shall be performed in the presence of the Engineer. Notice shall be given to the Engineer not less than 24 hours prior to the start of the test. The maximum test load shall not exceed 80 percent of the guaranteed ultimate tensile strength of the tendon. The test load shall be simultaneously applied to the entire tendon. Testing shall not be performed until the grout has cured for at least 72 hours or reached a cube strength of at least 2500 psi, whichever occurs later. The tieback testing equipment shall consist of:

(a) A minimum of two dial gauges, capable of measuring up to 6 inches of displacement with an accuracy of 0.001 of an inch and a minimum 2 inches of travel to measure the coaxial tieback movement. The dial gauges shall be supported on an independent reference point and shall be in contact with the tendon head or an extension of the tendon head.

(b) A hydraulic jack and pump to apply the test load. The jack and pressure gauge shall be calibrated as a unit. The pressure gauge shall be graduated in 100 psi increments or less. The hydraulic pump shall be capable of raising the load from one load increment to another in less than 60 seconds. The jack shall be calibrated no more than 30-days prior to any tests. This will require recalibrations during the execution of the contract if construction takes longer than 30-days.

(c) A calibrated master gauge shall also be kept at the site. Every 100 tieback tests or every four weeks, whichever is more frequent, the master gauge shall be placed in series with the test gauge during a tieback test. If the master gauge and the test gauge readings differ by more than 10 percent, the jack, pressure gauge, and master gauge shall be recalibrated.

Calibrations shall meet the requirements of ASTM E 74 and shall be submitted in a report to the Engineer prior to commencing work. The calibration report shall also include the model number and the name of the manufacturer and the manufacturer's brochure on the hydraulic jack, pump, and pressure gauge and shall include tabular and graphical presentation of pressure versus load data.

A minimum of one tieback per row shall be performance tested to verify a factor of safety of at least 2.0 in conformance with the procedures herein. The performance test shall be made by incrementally loading and unloading the tieback in conformance with the following schedule. The movement of

the tendon shall be measured and recorded to the nearest 0.001 inch at the alignment load and each increment of load with respect to an independent fixed reference point at the alignment load and each increment of load. The test load shall be monitored with a calibrated pressure gauge or load cell.

The load-hold period shall start as soon as the maximum test load is applied and the ground anchor movement, with respect to a fixed reference, shall be measured and recorded at 1 minute, 2, 3, 4, 5,6, and 10 minutes. If the ground anchor movement between one and ten minutes exceeds 0.4 inch, the creep test load shall be held for an additional 50 minutes. If the load hold is extended, the ground anchor movement shall be recorded at 15, 20, 30, 40, 50, and 60 minutes. At load increments other than the maximum test load, the load shall be held long enough to obtain movement reading.

Table 400.01-1: Tieback Performance Test Schedule

Load	Total Movement	Residual Movement
AL (Alignment Load) 0.25DL	St1	
AL		Sr1
0.25DL 0.50DL	St2 St2	
AL		Sr2
0.25DL 0.50DL 0.75DL	St3 St3 St3	
AL		Sr3
0.25DL 0.50DL 0.75DL 1.00DL	St4 St4 St4 St4	
AL		Sr4
0.25DL 0.50DL 0.75DL 1.00DL 1.25DL 1.50DL	St5 St5 St5 St5 St5 St5	
Creep Testing: Hold load for 10 minutes while recording movement at specified times. If the total movement measured during the load hold exceeds the specified maximum value then the load hold should be extended to a total of 60 minutes.		
AL 0.25DL 0.50DL 0.75DL 1.00DL 1.50DL 2.0 DL	St6 St6 St6 St6 St6 St6	Sr5

AL = Alignment Load
DL = Tieback Design Load
Stn = Total Strain for Increment n
Srn = Residual Strain for Increment n

Proof Testing. All of the remaining tiebacks tested shall be proof tested. The proof test shall be performed by incrementally loading the tieback in conformance with the following schedule.

The movement of the tendon shall be measured and recorded to the nearest 0.001-inch with respect to an independent fixed reference point at the alignment load and each increment of load. The test load shall be monitored with a calibrated pressure gauge or load cell.

Tieback Proof Test (Production)

Step	Load	Total Movement
1	AL	St0
2	0.25DL	St1
3	0.50DL	St2
4	0.75DL	St3
5	1.00DL	St4
6	1.20DL	St5 (Test Load)
7	1.33DL	Stn (Readings During Load Hold)
8	Reduce to Lock-Off Load	Stf
9	Adjust to Lock-Off Load	

AL = Alignment Load
DL = Tieback Design Load

The tieback tendon may be completely unloaded prior to lock-off, if circumstances warrant. Final stressing then does not require further movement readings.

The maximum test load for each increment in the performance and proof test shall be held for 10 minutes. The total movement with respect to the fixed reference shall be measured and recorded at 1, 2, 3, 4, 5, 6, and 10 minutes. If the total movement between 1 minute and 10 minutes exceed 0.04 inch, the test load shall be held for an additional 50 minutes. The total movements shall be recorded at 15, 20, 25, 30, 45, and 60 minutes. At load increments other than the ultimate test load, the load shall be held just long enough to obtain the movement reading.

Upon completion of the tieback test, the load shall be reduced to the lock-off load equal to 0.75 times the design load, and transferred to the permanent stressing anchorage. After transferring the load to the stressing anchorage and prior to removing the jack, an initial lift-off reading shall be made. The load determined shall be within 10 percent of the specified lock-off load. If the load is not within 10 percent of the specified lock-off load, the stressing anchorage shall be reset and another initial lift-off reading shall be made.

Acceptance Criteria. A tieback test is acceptable if:

(a) The total elastic movement measured in a performance test exceeds 80 percent of the theoretical elastic elongation of the unbonded testing length and the ground anchor resists the maximum test load with less than 0.04-inch of movement between 1 and 10-minutes.

(b) The total movement measured between 50 percent of the design load and the ultimate test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length for this respective load range.

(c) The creep rate does not exceed 0.08 inch per log cycle of time during the load hold of the performance or proof test.

If tiebacks fail to meet the acceptance criteria during testing, the Contractor shall modify the design or construction procedures, subject to review and approval of the Engineer. These modifications may include but are not limited to: modifying drilling and grouting methods, reducing the tieback design load by increasing the number of tiebacks, modifying the installation methods or increasing the anchor length. Any modifications of design or construction procedures shall be at no additional cost to the Authority. Proposed modification shall not be implemented until the Contractor receives written approval from the Engineer. Regroutable anchors may be regrouted and then retested using the performance test procedures. Rejected anchors shall be locked off at 50% of the maximum load obtained.

After the tieback has been accepted by the Engineer, the portion of the tendon protruding beyond the stressing anchorage may be cut. Cutting shall be done in conformance with the tendon supplier's recommendation.

Records

The Contractor shall provide the Engineer with the following records:

(a) Steel and grout certifications and mill reports to incorporating these materials in the work.

(b) Grouting records indicating the cement type, quantity injected, and the grout pressure shall be submitted once a week.

(c) Proof test results shall be submitted no less then once a week.

(d) Performance test results shall be submitted within 48 hours of completion of the test.

(e) As-built drawings showing the location of the tiebacks, total tieback length, anchor length, and unbonded length shall be submitted no later than a month after completion of the tieback installation.

Excavation

Excavation in front of the wall shall commence no sooner than 14 days after installing and concreting micropile soldier piles. Excavation shall proceed to the lowest subgrade with additional structural elements such as lagging, walls, and tiebacks installed at required intervals as shown on the approved working drawings.

Leaks encountered in the walls shall be sealed as the excavation progresses, if they are of sufficient size to permit loss of fines or loss or ground. Procedures may include grouting outside or through wall. The Engineer shall approve all ground water control measures proposed by the Contractor.

As the excavation in front of the wall proceeds, lagging shall be installed between the micropile soldier piles. The maximum height of unlagged face of excavation shall not exceed 3 feet. The unlagged face shall not exceed 15 inches if water flows from the face of excavation or if the soil face moves toward the excavation.

The excavation for installation of lagging shall be carefully performed to minimize formation of voids. Lagging members shall be separated only to the extent necessary to permit packing behind them. Packing shall be done to establish tight contact between the excavation face and the lagging.

Openings between lagging shall be packed with suitable material which will allow free drainage of water without loss of soil or packing. If unstable material is encountered during excavation, suitable

measures shall be taken to contain it in place and prevent ground displacement which may cause damage. Sufficient quantity of material shall be maintained on hand for lagging, shoring, bracing, and other operations for protection of work and for use in case of accident or emergency. Lagged face of the top-down wall between every two micropile soldier piles shall be covered full width, top to bottom, by prefabricated drainboard as shown.

Field Quality Control

The independent testing and inspecting agency shall sample materials, perform tests, and submit test reports during excavation and concrete placement for micropile soldier piles, tieback installation and testing. The report shall include photographs documenting the construction of the wall and unique events such as ground water or unsuitable soils.

Concrete. Sampling and testing of concrete for quality control will include the following:

(a) Sampling Fresh Concrete. ASTM C 172, except modified for slump to comply with ASTM C 94.

(1) Slump. ASTM C 143; 1 test at point of placement for each compressive strength test, but no less than 1 test for each concrete load.

(2) Air Content. ASTM C 231, pressure method or ASTM C 173, volumetric method; 1 test for each compressive strength test.

(3) Concrete Temperature. ASTM C 1064; 1 test hourly when air temperature is 40 degrees and below and when 80 degrees and above, and 1 test for each set of compressive strength specimens.

(4) Compression Test Specimens. ASTM C 31; 1 set of 5 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens, unless field-cured test specimens are required. A pair of cylinders each shall be tested at 7 and 28 days, with one cylinder held in reserve for testing at 56 days, as necessary.

(b) Sample and test each class of concrete at an intervals no greater than every 50 cubic yards delivered, and no less than one per day. When frequency of testing will provide fewer than 5 strength tests for a given class of concrete, testing will be conducted from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

(c) Strength level of concrete will be considered satisfactory if averages of sets of 3 consecutive strength test results for each class of concrete equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.

(d) Test results will be reported in writing to the Engineer and Contractor within 24 hours of testing. Reports of compressive strength tests will contain project identification name and number, date of concrete placement, name of concrete testing and inspection agency, concrete type and class, location of concrete batch in drilled pier, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength and type of break for both 7-and 28-day tests.

(e) Additional Tests. Testing and inspecting agency will make additional tests of concrete when test results indicate concrete strengths or other requirements have not been met.

Method of Measurement:

Support of Excavation including soldier piles, walers, lagging, and permanent tiebacks and all material, labor, equipment, expendables, etc., incidental to their installation and testing, will not be measured but will be paid for at the Contract lump sum price for pertinent Support of Excavation.

Basis of Payment:

The payment will be full compensation for all components of the top down wall, including micropiles, walers, lagging, and tieback anchors and shall include full compensation for designing, fabricating, furnishing, installing, and testing of micropiles and tiebacks and for all materials, temporary fill embankment, labor, tools, equipment, and incidentals necessary to complete the installation in conformance with the plans and Specifications. In the event that an increase or decrease in the area of the wall elevation is required, the increase or decrease in the lump sum bid shall equal the increased or decreased area multiplied by the lump sum price divided by the original elevation area.

11/16/10

302512· FURNISH AND PLACE STONE

Description:

This work consists of furnishing, hauling, placing, and compacting ballast as shown on the details in the Plans, at the locations shown on the Plans, and as directed by the Engineer.

Materials:

Ballast shall be granite, traprock, or quartzite free from injurious amounts of deleterious substances and conforming to all requirements of this specification.

CRITERIA:

Deleterious substances shall not be present in prepared ballast in excess of the following amount when using the specified test method.

Substance	Percent By Weight	Method of Test
Material Finer Than No. 200 Sieve	1.0	ASTM Designation-C117
Clay Lumps and Friable Particles	0.5	ASTM Designation-C142

The percentage by weight of flat and/or elongated particles permitted in the ballast shall not exceed 5% when visually inspected. Flat or elongated particles are defined as particles whose ratio of longest dimension to least dimension exceeds 5.

The water absorption shall not exceed 1 % of total weight when tested in accordance with ASTM designation C-127.

The percentage of wear of the ballast, as tested in the Los Angeles abrasion machine in accordance with ASTM Designation C535, grading No. 2, shall not exceed 18 percent.

The soundness of the ballast shall be such that when tested in the sodium sulfate soundness test in accordance with ASTM designation C88, the weighted average loss shall not be greater than 5 percent after ten cycles of the test.

GRADING REQUIREMENTS:

The grading of the ballast shall be determined in accordance with ASTM designation C-136.

The stone shall be well graded within the following size limitation areas, as per AREMA Size #3.

Size of Square Sieve Opening	Percent Passing by Weight
2.5”	100
2”	95 – 100
1.5”	35 - 70
1”	0 - 15
0.5”	0 - 5

ACCEPTABLE SOURCES

The following quarries are acceptable sources for ballast:

Hanson Aggregates 533 Forge Road Glen Mills, PA 19342 610-459-2492	Dyer Quarry, Inc. Rock Hollow Road Birdsboro, PA 19508 610-582-6010	Approved Equal

CLEANING AND HANDLING

When rock is of such nature that it is not produced or quarried in a clean and acceptable manner, washing shall be provided at the quarry or crusher plant.

Ballast shall be handled in such a manner that it is kept clean and free from segregation. Ballast shall be loaded clean and free from rubbish or any substances that would foul the ballast.

TESTING

Tests to determine quality of stone under “Criteria” of this specification shall be made at an independent testing laboratory approved by Engineer. Visual inspection and gradation tests shall be made at the place of production prior to shipment as often as considered necessary. The Contractor shall conduct all required gradation tests in accordance with ASTM C-136 and shall use calibrated testing equipment.

Tests may be made from time to time at the option of the Engineer and especially where new strata are being opened up for crushing into ballast.

Each stratum or portion of the quarry containing a variation in quality of stone shall be tested separately and not averaged with any other stratum or portion of the quarry. Two samples shall be taken from each ledge or different quality of stone used in the preparation of the ballast. Samples of the finished product for gradation and other required tests shall weigh not less than 150 pounds.

Testing requirements shall be completed at Contractor’s expense.

GRADATION SAMPLING

Ballast shall be ordered and paid for by the net ton. All billing from the Contractor shall include all ballast car /truck numbers in the unit and the tonnage loaded per each ballast car / truck.

Sampling, at a minimum, shall be every 25th car / truck. If new strata is being exposed, every 5th car / truck for the first 100 cars / trucks shall be sampled.

All sublots shall be consecutively numbered and include all car /truck numbers within the sublot.

All sampling for testing and evaluation will be performed at the quarry by a qualified technician.

If possible, the sample should be taken directly from the selected car / truck. If this procedure is not practical, the sample may be taken from the loading chute or stockpile during the loading of the selected car / truck. Care shall be taken in any of the sampling procedures to assure a representative sample.

INSPECTION

The Engineer shall have free entry to the producing plants at all times while the work of this Contract is being executed, and shall have all reasonable facilities afforded him by the Contractor, to satisfy him that the ballast is being prepared and loaded in accordance with specifications and contracts.

If material which has been or is being loaded is not according to this specification, the Engineer will notify the producer to stop further loading and to dispose of all cars / trucks under load containing defective material.

The Engineer reserves the right to reject any car / truck of ballast unless previously inspected, arriving at the site for unloading that does not conform to this specification. The ballast in the car / truck shall be disposed of at the expense of the Contractor, who will be held liable for all freight charges. If the ballast is unloaded prior to discovery of its defectiveness, payment may be refused to the Contractor without return of the defective ballast.

On-site track scales or truck scales with facilities to allow loading of rail cars by truck, will be required to periodically verify net tonnage per car.

ACCEPTANCE

Acceptance for gradation shall be in accordance with Paragraph 4 of this specification.

To be accepted the ballast presented must fulfill all the requirements of this specification.

The Contractor is required to complete the “Quality Control Sieve Analysis” sheet at the end of this section or similar report of there own for all shipments. This analysis sheet shall be completed in accordance with “Gradation Sampling” section of these specifications.

All testing results shall be forwarded to the Engineer. Sieve analysis sheets will be kept on file by the Contractor for 1 year.

Construction Methods:

HANDLING:

Ballast shall be kept clean and free from segregation during transporting, handling, and placing operations. When rock is of such nature that it is not produced in a clean and acceptable manner, washing shall be provided at the quarry or crusher plant.

Handle and transport during all stages of manufacture and supply in a manner that ensures a uniform product.

Handle and transport aggregates at all times in a manner and with equipment that prevents segregation and continuation by mud or any other deleterious material.

Do not allow aggregates to fall from a height in a manner that the larger particles are thrown beyond the smaller particles. When placing aggregates in a bin drop the aggregate vertically over the center of the bin.

Washing of aggregate, where required, shall be done at the quarry or crusher facility and not on-site.

STOCKPILING:

Stockpile materials on level, well-drained sites free of all foreign materials and of adequate bearing capacity to support the weight of the materials to be placed thereon.

Except where stockpiled on Portland cement or asphaltic concrete foundations or on otherwise acceptably stabilized areas, provide a compacted sand stockpile base of less than 1 foot in depth.

Build stockpiles in layers not to exceed 3 feet in depth, completing each layer over the entire area of the stockpile before beginning the next layer. Uniformly spot-dump aggregates delivered to the stockpile in trucks. Coning of the piles or spilling of materials over the edges of the pile is prohibited.

PLACEMENT OF BALLAST:

The Contractor shall submit his plan for handling and placing ballast. This plan shall include source, type of equipment to be used, location of stockpiles and method of distribution.

Ballast shall be placed using an approved spreading machine or box in such a manner that no segregation occurs. Ballast shall not be plowed into place.

Ballast shall be uniformly distributed and compacted over the entire ballast section.

The initial lift of ballast shall be limited to a total compacted depth of eight (8) inches and shall be compacted with not less than four passes by either a self-propelled, pneumatic-tired roller or vibratory compactor prior to placing additional lifts of ballast.

The self-propelled, pneumatic-tired roller shall have a gross weight of not less than nine tons, and the vibratory compactor shall have a weight of not less than 5,000 pounds and shall be capable of applying a dynamic load of not less than 18,000 pounds.

No more than 1,000 feet of ballast, as measured along the baseline of construction, shall be spread in advance of compaction operations.

The Contractor shall verify final top of ballast elevations and widths to ensure conformance with the plans. Tolerances for elevations shall be plus or minus 1-1/2 inches. Tolerances for widths shall be plus or minus 4 inches.

Method of Measurement:

The quantity of ballast will be measured as the actual number of tons of ballast placed, compacted, and accepted. The weight shall be calculated as specified in Subsection 109.01.

Basis of Payment:

The quantity of ballast will be paid for at the Contract unit price per ton. Price and payment will constitute full compensation for furnishing all materials; hauling, sampling, spreading, compaction, and for all labor, equipment, tools and incidentals required to complete the work.

RAILROAD BALLAST AREMA # 3
FOR MAINLINE TRACK

QUALITY CONTROL SIEVE ANALYSIS

Test Date: Product:

Company Shipment via truck or rail

Plant Tested by

	Sample _____ Truck# ___			Sample _____ Truck#			
Sieve Size	Wt. Retained	% Retained	% Passing	Wt. Retained	% Retained	% Passing	Specs
2-1/2”							100
2”							95 -100
1-1/2”							35 -70
1”							0 – 15
½”							0 – 5
Pan							
Total							

	Sample _____ Truck# _____			Sample _____ Truck#			
Sieve Size	Wt. Retained	% Retained	% Passing	Wt. Retained	% Retained	% Passing	Specs
2-1/2”							100
2”							95 -100
1-1/2”							35 -70
1”							0 – 15
½”							0 – 5
Pan							
Total							

Remarks

11/16/10

601514 - RAILROAD AT GRADE CROSSING

Description:

The work under this section shall consist of constructing or improving at-grade crossings of freight tracks to provide access to the project.

Submittals:

Prepare plan of crossing construction / improvement and submit to Norfolk Southern Railroad's or CSXT's Division Superintendent for review and approval. Submittals shall occur a minimum of 60 days prior to the expected date of construction. No construction shall occur until written approval in received and provided to the Engineer.

Construction Methods:

Construct or improve existing at-grade crossings in accordance with Norfolk Southern Standard Crossing Plans 7-5 and 7-5A, below, except that full depth asphalt will replace the "Compacted NS Standard Sub-Ballast" between the rails.

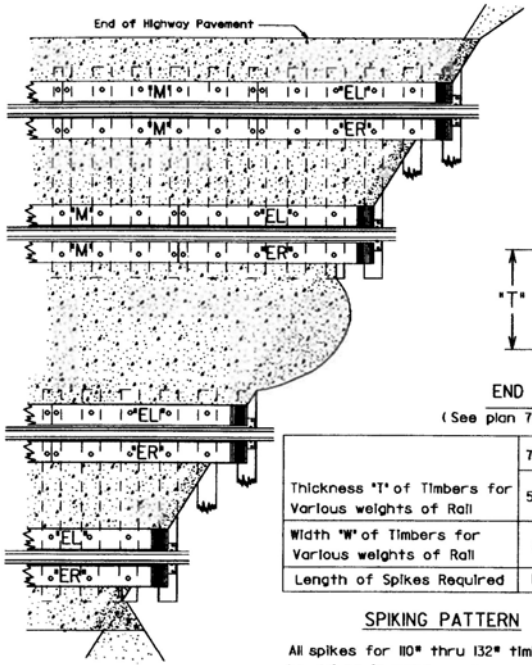
Method of Measurement:

The quantity of Bid Item 601514 "Railroad At Grade Crossing" will be measured on a linear foot basis.

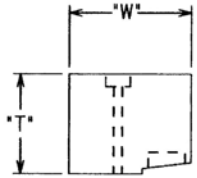
Basis of Payment:

Bid Item 601514 "Railroad At Grade Crossing" will be paid for at the Contract unit price per linear foot. Price and payment will constitute full compensation for furnishing, hauling, and installing materials, including timber ties, asphalt, graded aggregate base, spikes, geotextile, excavation, backfilling, and compacting; and for all labor, equipment, tools, and incidentals required to complete the work.

11/16/10



ACUTE ANGLE CROSSING



END VIEW OF TIMBER

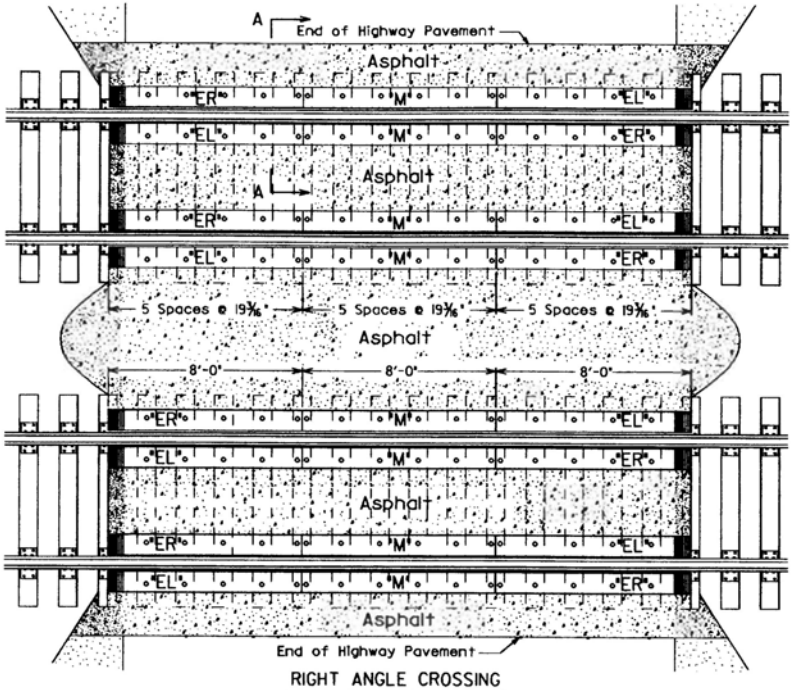
(See plan 7-5A for details of timber)

	75°	80°	85°	90°	100°	110°	112° 115°	132°
Thickness "T" of Timbers for Various weights of Rail	5¾"	5¾"	5¾"	6⅛"	6½"	7"	7½"	8"
Width "W" of Timbers for Various weights of Rail	8"	8"	8"	8"	8"	10"	10"	10"
Length of Spikes Required	10"	10"	10"	10"	12"	12"	12"	12"

SPIKING PATTERN

All spikes for 110° thru 132° timbers shall be driven in holes as shown at left in order to match the preframed timber.

For 75° thru 100° timbers drive 4 rail spikes per tie plate.

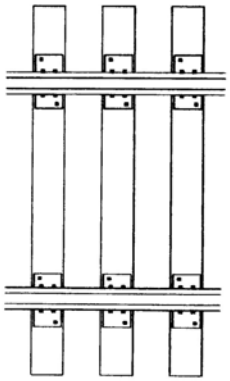


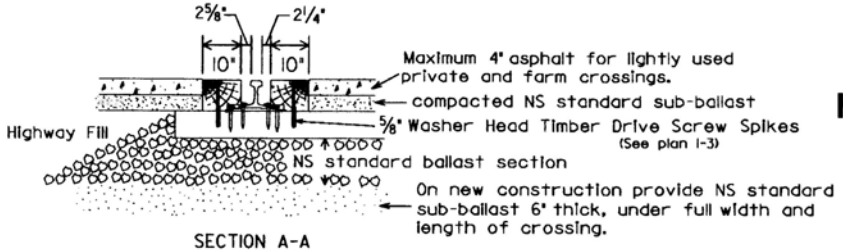
RIGHT ANGLE CROSSING

NOTES

Timbers to be shaped and bored prior to creosote treatment.
Pavement to be full depth asphalt, except lightly used private crossings and fram crossings. These type crossings are to have compacted NS standard sub-ballast with 4" maximum asphalt.
Where highway or street have seperate sidewalks, the entire width of crossing to the outside edge of sidewalk, will be paved, where practical.
When necessary provide drainage between tracks.
To allow for compaction of paving under vehicular traffic, the surface of the asphalt paving shall be raised ⅜" above the top of the crossing timbers for the width of the roadway.
To increase width of crossing use additional "M" timbers.

DATE	REVISION
1-6-95	Added notes NS standard sub-ballast
1-10-95	Added rail spikes 100° thru 132° timber





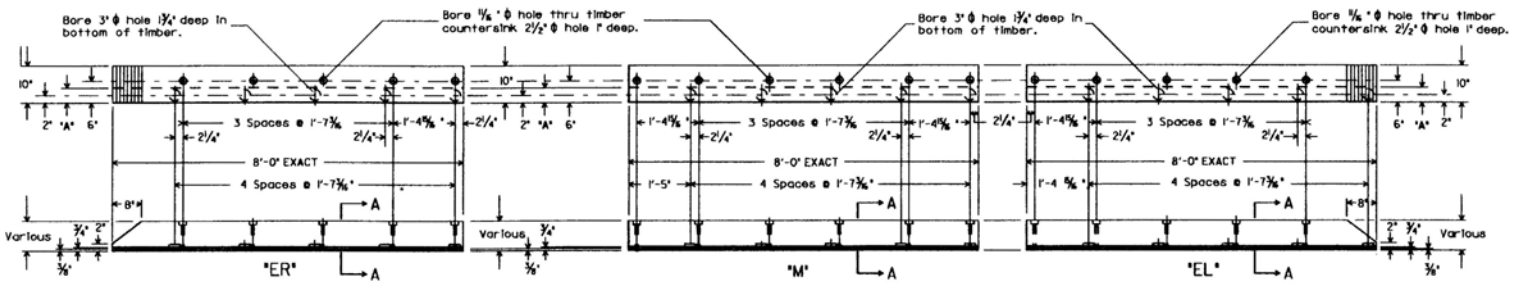
SECTION A-A

NORFOLK SOUTHERN RAILWAY COMPANY

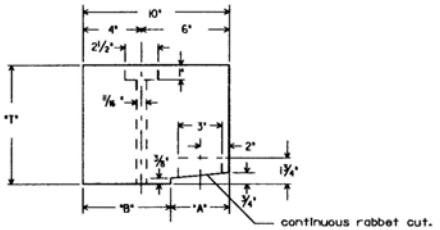
HIGHWAY GRADE CROSSING ASPHALT PAVING

JANUARY 1995

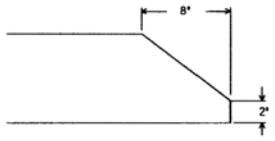
Atlanta, Georgia



110# THRU 132# TIMBER

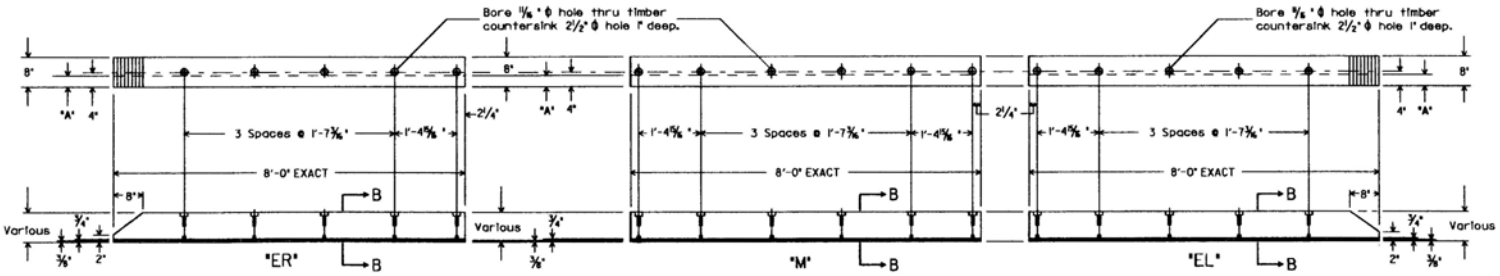


ENLARGED SECTION A-A

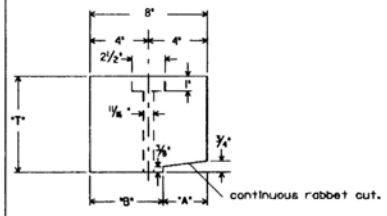


BEVEL CUT OF END TIMBERS

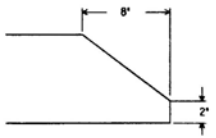
Weight of Rail	75#	80#	85#	90#	100#	110#	112# 85#	132#
Thickness "T" of Timbers for Various weights of Rail	5¾"	5¾"	5¾"	6½"	6½"	7"	7½"	8"
Width "B" of Timbers for Various weights of Rail	8"	8"	8"	8"	8"	10"	10"	10"
Dap "A" of Timbers for Various weights of Rail	3"	3"	3"	3"	3"	3"	3"	4"
Base "B" of Timbers for Various weights of Rail	5"	5"	5"	5"	5"	7"	7"	6"
Length of Spikes Required	10"	10"	10"	10"	12"	12"	12"	12"



75# THRU 100# TIMBER



ENLARGED SECTION B-B



BEVEL CUT OF END TIMBERS

NOTES

Timbers to be shaped and bored prior to creosote treatment.
All daps will be cut into the bottom of the timber which is the wide surface closest to the heart.
Tolerances: ±⅛" overall thickness, width, and length.
±¼" on hole spacing and countersunk depth.
+¼" and -0" dap width.
+⅛" and -0" dap thickness.

REVISION

DATE

NORFOLK SOUTHERN RAILWAY COMPANY

HIGHWAY GRADE CROSSING TREATED TIMBER

DECEMBER 1989

Atlanta, Georgia

601520 - TEMPORARY TIMBER MAT

Description:

The item shall consist of furnishing all materials and constructing a temporary timber mat for access across the wetland area as shown on the Plans and as directed by the Engineer. All equipment shall utilize this temporary timber mat when trying to access the staging area and the underside of the bridge.

Materials:

In accordance with Section 601 of the Standard Specifications and the following:

Timber shall have a strength and grade adequate to support the Contractor's anticipated vehicular or equipment loads. Any preservative treatment applied to the matting shall be environmentally safe for wet conditions and be preapproved by the Department.

Hardware shall be in accordance with Section 601.07 of the Standard Specifications.

Construction Methods:

The Contractor shall submit to the Department for approval shop drawings and design calculations indicating the layout, size of members, arrangement of members and the construction methods at least two weeks prior to initiating construction. This information shall be signed and sealed by a Professional Engineer registered in the State of Delaware. A timber mat system is shown on the plans and shall be used for conceptual purposes only. The actual timber mat system utilized for the construction shall be designed for the anticipated construction loads and shall be compatible with the environment. Placement of aggregate or stone for access within the wetland area is not permitted.

The temporary timber matting should be periodically inspected by the Contractor and any damaged or deteriorated components should be replaced. The Contractor assumes full responsibility for the load carrying capability of the system and for its anchorage, as required, to resist high water flows. No additional compensation will be granted for repairing any portion of the system damaged during naturally occurring weather events or contractor usage. The Contractor is responsible for retrieving lost mats and repairing any damage caused by naturally occurring weather events.

The contractor shall not that the “construction platforms” where the timber mats will be utilized are located in tidal areas.

Basis of Payment:

The payment for the item shall be made for at the contract unit price bid per Lump Sum for "601520 - Temporary Timber Mat", which price and payment shall constitute full compensation for furnishing and placing all materials, for design, submission of signed and sealed drawings and computations, installation and removal of timber mat materials, geotextiles, and for all labor, equipment, tools and incidentals required to complete the work.

Elements Paid for Separately:

Bid Item 203500 “Hydraulic Excavation”
Bid Item 269000 “Turbidity Curtain, Floating”
Bid Item 302005 “Graded Aggregate Base Course, Type B

Bid Item 302012 “Delaware No. 57 Stone”
Bid Item 602530 “Grout Repairs for Substructure”
Bid Item 602614 “Underwater Revetment Mattress”
Bid Item 602789 “Underwater Grout Filled Geotextile Bags”
Bid Item 712021 “Riprap, R-5”
Bid Item 712023 “Riprap, R-7”
Bid Item 713002 “Geotextile, Separation”
Bid Item 756000 “Sand”
Bid Item 763624 “Scour Protection”

11/16/10

602530 –GROUT REPAIRS FOR SUBSTRUCTURE

Description:

This work consists of providing all labor, materials and equipment necessary to fill scour voids between existing timber piles using grout at the locations designated on the Plans or as may be directed by the Engineer.

Materials:

The grout mix shall consist of Type II portland cement, mortar sand aggregate, and water proportioned to provide a pumpable mixture. The 28 day compressive strength shall be a minimum of 150 psi.

A suitable ready mixed grout alternate may be used subject to the review and approval by the Engineer.

The Contractor shall submit the proposed grout mix design and method of installation to the Engineer for review and approval prior to ordering any material

Construction Methods:

Prior to the start of this work, the Contractor shall, in the presence of the Engineer, conduct a full and thorough inspection of the existing undermined areas of the abutment area. The purpose of this inspection shall be to identify and confirm the locations and approximate extent of each area of abutment undermining for use in determining repair locations. Should the actual field conditions differ or conflict with the Plans, the Engineer will be the sole judge in determining the extent of abutment undermining repairs.

The Contractor shall install minimum 1-1/2 inch diameter grout injection ports before placing the grout bags. The grout injection ports shall be spaced a maximum of 4 feet apart and shall extend from the 1'-0" above the bottom of the initial grout bags to above the grout bags placed on top of the concrete revetment mattress.

Following installation of all underlying grout bags, concrete revetment mattress and overlaying grout bags, the grout mix shall be pumped into the abutment voids through grout injection ports. Grouting shall continue until grout is visible at the surface between the grout bags and abutment.

Following completion of the grouting, trim injection ports flush with the top grout bags

"Topping-Off" of the grouted area shall occur a minimum of 48 hours after the initial grouting and shall fill all voids between the top grout bags and the abutment.

Method of Measurement:

The quantity of grout used will be measured as the number of cubic yards pumped into abutment voids including the amount of grout remaining in the injection ports.

Basis of Payment:

The quantity of grout used for substructure repairs will be paid for at the Contract unit price per cubic yard for the Bid Item 602530 "Grout Repairs for Substructure" as specified. Price and

payment will constitute full compensation for installing the injection ports, pumping grout into existing voids, topping off grout, working underwater, and for all labor, inspection, equipment, tools and incidentals necessary to complete the work as specified.

Elements Paid for Separately:

Bid Item 203500 "Hydraulic Excavation"
Bid Item 269000 "Turbidity Curtain, Floating"
Bid Item 302005 "Graded Aggregate Base Course, Type B
Bid Item 302012 "Delaware No. 57 Stone"
Bid Item 601520 "Temporary Timber Mats"
Bid Item 602614 "Underwater Revetment Mattress"
Bid Item 602789 "Underwater Grout Filled Geotextile Bags"
Bid Item 712021 "Riprap, R-5"
Bid Item 712023 "Riprap, R-7"
Bid Item 713002 "Geotextile, Separation"
Bid Item 756000 "Sand"
Bid Item 763624 "Scour Protection"

11/16/10

602614 - UNDERWATER REVETMENT MATTRESS

Description:

This work shall consist of furnishing and installing articulating precast concrete revetment mats for scour protection in Little Mill Creek under the four existing railroad bridges, in conformity with the requirements specified herein, on the plans, and as directed by the Engineer.

Materials:

Articulating Precast Concrete Revetment Mats:

1. Cellular Concrete Blocks:
    1. Cementitious Materials - Materials shall conform to the following applicable ASTM specifications:
        1. Portland Cements - Specification C 150, for Portland Cement.
        2. Blended Cements - Specification C 595, for Blended Hydraulic Cements.
        3. Hydrated Lime Types - Specification C 207, for Hydrated Lime Types.
        4. Pozzolans - Specification C 618, for Fly Ash and Raw or Calcined Natural Pozzolans for use in Portland Cement Concrete.
    2. Aggregates shall conform to the following ASTM specifications, except that grading requirements shall not necessarily apply:
        1. Normal Weight - Specification C 33, for Concrete Aggregates.
    3. Casting
        1. The concrete units shall be produced by a dry cast method. The dry cast units obtain strength in a shorter duration as well as an increase in the durability and overall quality of product.
    4. Physical Requirements
        1. At the time of delivery to the work site, the units shall conform to the physical requirements prescribed in the table below.

Compressive Strength Net Area Min. psi		Water Absorption Max. lb/ft^3	
Avg. of 3 units	Individual Unit	Avg. of 3 units	Individual Unit
4,000	3,500	10	12

        2. When applicable, the manufacturer shall meet all requirements pertaining to a concrete unit's durability pertaining to a freeze-thaw environment.
        3. Units shall be sampled and tested in accordance with ASTM D 6684-04, Standard Specification for Materials and Manufacture of Articulating Concrete Block (ACB) Revetment Systems.
    5. Visual Inspection
        1. All units shall be sound and free of defects that would interfere with either the proper placement of the unit or impair the performance of the system. Surface cracks incidental to the usual methods of manufacture, or surface chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.
        2. Cracks exceeding 0.25 inches (.635 cm) in width and/or 1.0 inch (2.54 cm) in depth shall be deemed grounds for rejection.
        3. Chipping resulting in a weight loss exceeding 10% of the average weight of a concrete unit shall be deemed grounds for rejection.

4. Blocks rejected prior to delivery from the point of manufacture shall be replaced at the manufacturer's expense. Blocks rejected at the job site shall be repaired with structural grout or replaced at the expense of the contractor.

6. Sampling and Testing

1. The Engineer or his/her authorized representative shall be accorded proper access to facilities to inspect and sample the units at the place of manufacture from lots ready for delivery.

2. Field installation procedures shall comply with the procedures utilized during the hydraulic testing procedures of the recommended system. All system restraints and ancillary components (such as synthetic drainage mediums) shall be employed as they were during testing. For example, if the hydraulic testing installations utilize a drainage layer then the field installation must utilize a drainage layer; an installation without the drainage layer would not be permitted.

3. The theoretical force-balance equation used for performance extrapolation tends for conservative performance values of thicker concrete units based on actual hydraulic testing of thinner units. When establishing performance values of thinner units based on actual hydraulic testing of thicker units, there is a tendency to overestimate the hydraulic performance values of the thinner units. Therefore, all performance extrapolation must be based on actual hydraulic testing of a thinner unit then relating the values to the thicker units in the same “family” of blocks.

4. Additional testing, other than that provided by the manufacturer, shall be borne by the purchaser.

7. Manufacturer

1. The individual blocks comprising the mat shall have the nominal characteristics, such as the open area, that are presented in Table below.

STANDARD SIZES OF ARMORFLEX BLOCKS

Class	Type	Lbs	Lbs./Sq.ft	Length Inches	Width Inches	Height Inches	Open Area %
85	Closed	145-167	82-98	17.4	15.5	8.5	10

2. Cellular concrete blocks shall be ARMORFLEX as manufactured by, or approved equal:

ARMORTEC
301 Pascoe Blvd
Bowling Green, KY 42104
Phone: (800) 305 - 0523
Fax: (270) 783 - 8952

3. Cellular concrete blocks shall be ARMORFLEX®, or approved equal, as sold and distributed by:

CONTECH Construction Products Inc.
1001 Grove Street
Middletown, OH 45044 - 5800
Phone: (513) 425 - 5896
Fax: (513) 425 – 5993

2. Revetment Cable and Fittings

1. Polyester Revetment Cable and Fittings: Revetment cable shall be constructed of high tenacity, low elongating, and continuous filament polyester fibers. Cable shall consist of a core construction comprised of parallel fibers contained within an outer jacket or cover. The weight of the parallel core shall be between 65% to 70% of the total weight of the cable. The revetment cable shall have the following physical characteristics:

Nominal Cable Diam.	Approx. Avg. Strength Lbs. (kN)		Lbs./100 ft (kg/m) Min. Lbs. (kg)	Max Lbs. (kg)
1/4"	3,700	(16.4)	2.47 (.04)	2.74 (.04)
5/16"	7,000	(31.1)	3.99 (.06)	4.42 (.07)
3/8"	10,000	(44.5)	3.75 (.07)	5.26 (.08)
1/2"	15,000	(66.7)	8.93 (.13)	9.90 (.15)

2. Elongation requirements specified below are based upon stabilized new, dry cable. Stabilization refers to a process in which the cable is cycled fifty (50) times between a load corresponding to $200D^2$ and a load equal to 10%, 20% or 30% of the cable's approximate average breaking strength. Relevant elongation values are as shown in the table below. The tolerance on these values is ± 5%:

Nominal Cable Diam.	Approx. Avg. Strength Lbs. (kN)		Pounds /100 ft (kg/m) Min. Lbs. (kg)		Max Lbs. (kg)	
1/8"	1,700	(7.5)	2.8	(.04)	2.9	(.04)
3/16"	3,700	(16.4)	6.2	(.09)	6.5	(.10)
1/4"	6,100	(27.1)	0.6	(.16)	11.0	(.16)
3/8"	13,300	(59.2)	23.6	(.35)	24.3	(.36)

3. The revetment cable shall exhibit resistance to most concentrated acids, alkalis and solvents. Cable shall be impervious to rot, mildew and degradation associated with marine organisms. The materials used in the construction of the cable shall not be affected by continuous immersion in fresh or salt water.
4. Selection of cable and fittings shall be made in a manner that insures a safe design factor

for mats being lifted from both ends, thereby forming a catenary. Consideration shall be taken for the bending of the cables around hooks or pins during lifting. Revetment cable splicing fittings shall be selected so that the resultant splice shall provide a minimum of 60% of the minimum rated cable strength. Fittings such as sleeves and stops shall be aluminum and washers shall be galvanized steel unless otherwise shown on the Contract Drawings.

Construction Methods:

The Contractor shall note the limited vertical and horizontal clearances available for this construction and the tidal influences at this site. As shown on the scour protection construction staging plans, the existing streambed will be removed using hydraulic excavation methods.

Placement of the articulating precast concrete revetment mats may be accomplished by suspending them from pontoons at low tide and using piles placed beyond the limits of construction to guide the articulating precast concrete revetment mats into place with winches. The actual methods employed shall be designed by the contractor.

Install and fasten revetment mats in accordance with the manufacturer's recommendations.

Method of Measurement:

This work will be measured by the square foot of surface area of articulating precast concrete revetment mats incorporated in the work as shown on the plans or as directed by the Engineer.

Basis of Payment:

This work will be paid for at the contract unit price bid per square foot for "602614 - Underwater Revetment Mattress." This payment will be full compensation for revetment mattress placement system including any piles (designing, furnishing, installing, and removing), flotation devices, winches; and all labor, equipment, materials and incidentals necessary to furnish and install, complete in place, the underwater concrete revetment mattress envelopes.

Elements Paid for Separately:
Bid Item 203500 "Hydraulic Excavation"
Bid Item 269000 "Turbidity Curtain, Floating"
Bid Item 302005 "Graded Aggregate Base Course, Type B
Bid Item 302012 "Delaware No. 57 Stone"
Bid Item 601520 "Temporary Timber Mats"
Bid Item 602530 "Grout Repairs for Substructure"
Bid Item 602789 "Underwater Grout Filled Geotextile Bags"
Bid Item 712021 "Riprap, R-5"
Bid Item 712023 "Riprap, R-7"
Bid Item 713002 "Geotextile, Separation"
Bid Item 756000 "Sand"
Bid Item 763624 "Scour Protection"

11/16/10

602625 - POST AND PLANK RETAINING WALL

Description:

This work consists of furnishing materials and constructing post and plank retaining wall as indicated on the Contract drawings, specified herein, or as directed by the Engineer.

The work shall include the installation of piles, fabrication and erection of precast concrete planks. Furnishing all material necessary to complete the walls is also included in this work.

General Requirements - The Contractor shall submit complete shop drawings of the walls before construction/fabrication for review and approval. The shop drawings shall indicate all fabrication details, material handling, transportation and installation procedures.

The Contractor will submit to the Engineer shop drawings of the precast concrete planks which show complete details, dimensions and other information and data necessary for the complete fabrication and erection of the precast concrete planks. In addition to the items specified above, the shop drawings will clearly show all items incorporated into the planks such as inserts, reinforcement bars, accessories and handling devices.

The Contractor shall supply a 2 ft. x 2 ft. sample of each type of plank required for the project for approval by the Department. Fabricate the sample planks by the same methods and processes that will be used for all production. The approved sample panels shall be erected at the project site at a location designated by the Engineer. Planks delivered to the project site which do not conform to the approved sample will be rejected.

Materials:

All materials are to conform to the following sections of the Standard Specifications:

Structural Steel - Section 826
Portland Cement Concrete, Class A - Section 812
Bar Reinforcement - Section 603

Construction Methods:

General - Wall construction will require the installation of steel H-sections, the fabrication, delivery and erection of precast concrete planks, the placement of backfill as required to complete the embankment. Pre-drilling shall be used for the installation of posts as shown on plans. Predrilled holes shall be concrete grouted to the full depth of the pre-drilling prior to placing the post with 3000-psi grout.

Clearances – The contractor shall note the proximity of the overhead high voltage wires, catenary lines, and active tracks.

Structural Steel - Structural Steel for posts will meet the requirements of Section 826. Structural steel will be AASHTO M223, Grade 50 (ASTM A572, Grade 50). All structural steel H-piles shall be galvanized in accordance with Sections 826.07.

All surfaces of the flange which will be exposed to view in the final construction will be painted.

Paint will be applied over the galvanized surface. All products required for the application of the paint system will be supplied by a single manufacturer to ensure compatibility. Prior to application of the paint system, remove all dirt, oils, grease, wax, release agents, etc. using appropriate cleaners in conformance with SSPC-SP1. The galvanized surface shall be chemically etched and treated using a phosphoric acid product. The chemical etching agent shall be thoroughly washed from the surface of the steel using water and low pressure wash equipment. The primer coat of paint shall be applied within twenty-four (24) hours of the chemical etching. The primer will be a two component, low VOC, polyamide cured, epoxy primer for use on galvanized surfaces. The primer will contain a minimum 60.4% solid as measured by volume. The primer will be applied to a **3 mil** dry film thickness. The finish coat will be a two component, low VOC, high performance, acrylic aliphatic polyurethane. The finish coat will contain 54.0% solids as measured by volume. The finish coat will be applied to a **2 mils** dry film thickness. Acceptable products and manufactures include but are not limited to:

Chemical etching agent - Galvaprep 5 as manufactured by Porter Paints
Epoxy Primer - PorterGlaze 4300 Epoxy Primer as manufactured by Porter Paints
Finish Coat - PorterThane 9000 Gloss Urethane as manufactured by Porter Paints. Other manufactures and products may be submitted for review by the Engineer. Color of the finish coat will be supplied and approved by the Department.

Steel Casings – Conform to ASTM A252, Grade 2 or ASTM A36. Minimum diameter = 20 inches.

Requirements for Cement Grout – The cement grout shall consist of a mixture of Portland cement and water so proportioned and mixed as to provide a fluid grout capable of maintaining the solids in suspension without appreciable bleed. The materials shall be so proportioned to provide a hardened grout having a minimum ultimate compressive strength of 3,000 psi at 28 days in accordance with ASTM C109.

Cement shall conform to ASTM C150 Portland Cement Type I/II. If sand-cement grout is used, sand shall conform to ASTM C 144. Admixtures shall conform to ASTM C 494. Mixing water for cement grout shall be clean and potable.

Requirements for Precast Concrete Planks - Precast concrete planks will be shop fabricated. Concrete for precast concrete planks will meet the requirements of Section 812, Class A Portland cement concrete.

A concrete mix design will be prepared by the Contractor and submitted to the Engineer for approval. The strength potential of this concrete mix will be verified by compression tests of at least two (2) cylinders tested at each, seven (7) days and at twenty-eight (28) days for each batch of concrete supplied.

All surfaces of the concrete will be true and even, free from rough, open or honey combed areas, depressions or projections. Ensure that precast concrete planks are cast in one continuous lift to eliminate cold joints. Brush or bag finishing or painting of surfaces with grout will not be permitted. Additional water will not be added to facilitate finishing.

The plank sections will be handled in such a manner as to prevent structural damage. Inserts for lifting purposes will be provided in the top of each section. Storage will be subject to inspection and approved by the Engineer.

The plank sections will be substantially free of fractures and surface roughness. The quality of materials, the process of manufacture and the finished plank sections will be subject to inspection

and approved by the Engineer. Cracked or damaged planks will be replaced by the Contractor at no additional cost to the Department.

The plank sections will be subject to rejection on account of failure to meet any of the specification requirements. In addition, individual sections may be rejected because of any of the following:

Fractures or cracks
Defects that indicate imperfect proportioning, mixing and molding
Surface defects indicating honeycombing or open texture
Damaged or cracked ends
Dimensional and positional tolerances

Precast concrete planks will be fabricated to the dimensions indicated on the contract drawings within the tolerances listed below (tolerances are not to be considered accumulative). Members having dimensions outside the tolerance limits will be subject to rejection.

Length - + 1/8 inch, - 1/4 inch
Width - +/- 1/16 inch
Thickness - + 1/8 inch, - 1/4 inch
Out of Square - +/- 1/4 inch (Difference in length of the two (2) diagonal measurements)

The sides of the precast planks will be string line straight.
Anchors and inserts will be within 1/8 inch of centerline location as shown on the Contract drawings.
Reinforcement will be within 1/4 inch of the position indicated on the Contract drawings.

Bar Reinforcement, Epoxy Coated - Reinforcement bars will be fabricated, as indicated on the Contract drawings, and placed in the position in the plank section within the specified tolerances. Fabrication, storage, and installation of reinforcement bars will be in conformance with the requirements of Standard Specification 603.

Construction Requirements - The Contractor will assume all responsibility for the wall and its elements and maintain the wall in an acceptable condition until the project is accepted by the Department.

Erection - The plank sections will be erected and placed in accordance with the Contract drawings and approved shop drawings.

Plank sections will be inspected at the project site for possible damage and cracking during shipment, and tolerances and other dimensions required for the satisfactory erection. Plank sections damaged by improper storing, handling, transporting or erecting will be replaced at no additional cost to the Department.

Miscellaneous - Construction of the following items will be in accordance with the applicable section of the Standard Specifications:

Excavation and Backfilling for Structures - Section 207

Method of Measurement:

The quantity of post and plank retaining wall will be measured in the field by determining the actual number of square feet of post and plank retaining wall installed and accepted. Horizontal measurements will be made along the face of the wall and vertical measurements will be made from

the bottom elevation of the bottom installed precast plank to the top elevation of the upper precast plank.

Basis of Payment:

The quantity of post and plank retaining wall will be paid for at the Contract unit price per square foot. Price and payment will constitute full compensation for furnishing and installing all materials, except as listed below, for all supervision, field engineering, shop drawings, labor, equipment, and materials necessary for excavation, installation, protection, backfill.

Elements Paid for Separately:

Bid Item 208000 "Excavation and Backfill for Test Pits"
Bid Item 614817 "Bore 20" Steel Pipe Casing"
Bid Item 618060 "Steel H Pile, HP 12 x 53"
Bid Item 619040 "Install Steel H Pile, HP 12 x 53"

11/16/10

602789 – UNDERWATER GROUT FILLED GEOTEXTILE BAG

Description:

The work covered by this Section consists of furnishing labor, material, and equipment and performing the operations required for furnishing, placing, and filling grout filled geotextile bags as defined herein and on the Contract Drawings for the scour protection in Little Mill Creek at the railroad bridges and Retaining Wall # 1.

As shown on the plans, the scour protection shall consist of geotextile, articulating precast concrete revetment mats, grout filled geotextile bags, R-5 riprap, R-7 riprap, # 57 Stone, and sand backfill, and all other miscellaneous or incidental materials required to complete the construction of the scour protection in accordance with these specifications and the Contract Drawings.

The Contractor shall note the limited vertical and horizontal clearances available for this construction and the tidal influences at this site. As shown on the scour protection construction staging plans, the existing streambed will be removed using hydraulic excavation methods. The materials removed will be pumped into dewatering bags for drying and disposal. Refer to Appendix C "Soil Sample Analytical Results - Environmental and Waste Characterization" for expected characteristics of the excavated materials.

The following References are publications that form a part of this Section:

ASTM D 123	(1993a) Standard Terminology Relating to Textiles
ASTM D 422-63 (2002)	Test Methods for Particle-Size Analysis of Soils
ASTM D 2487-00	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 3786-01	Hydraulic Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Test Method
ASTM D 3884-01 (E01)	Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)
ASTM D 4354-99	Standard Practice of Sampling of Geosynthetics for Testing
ASTM D 4355-02	Deterioration of Geotextile from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 44991-99a	Water Permeability of Geotextiles by Permitivity
ASTM D 4533-91	(1996) Trapezoid tearing Strength of Geotextiles
ASTM D 4595-86	(2001) Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Method
ASTM D 4632-91	(2003) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751-99a	Determining Apparent Opening Size of a Geotextile
ASTM D 4759-02	Determining Specification Performance of Geosynthetics
ASTM D 4833-00E1	Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

ASTM D 4873-02	Identification, Storage, and Handling of Geotextiles
ASTM D 4884-96	(2003) Strength of Sewn or Thermally Bonded Seams of Geotextiles

Contractor Qualifications:

The Contractor installing the scour protection shall have satisfactorily completed geotextile bag and dewatering bag installation of similar scope and magnitude to this Contract and shall submit documentation indicating this experience to the Engineer a minimum of 60 days prior to the scheduled scour protection construction.

Pre-Construction Submittals:

Manufacturers' data for grout filled geotextile bags shall be submitted by the installation contractor a minimum of 60 days prior to scheduled delivery of the items for review by the Engineer. The information provided shall attest that the items meet the gradation, chemical, physical, and manufacturing requirements in these specifications. Submission shall include a sample of grout filled geotextile bags. The samples shall measure a minimum of 12 inches by 12 inches.

Products Certificates: A written certificate of compliance from the material suppliers shall be submitted upon delivery of grout filled geotextile bags. The certificate shall state that the products shipped to the site meet or exceed the minimum requirements of these specifications.

Work Plan: The Contractor shall submit a Work Plan for approval a minimum of 60 days prior to the start of work. The Work Plan shall incorporate the requirements specified herein with respect to the scour protection and associated components. The work plan shall also include geometry, orientation, installation, positioning, placement, and filling procedures. Fabrication details or installation techniques that differ from those specified herein shall be documented in the Work Plan and submitted for consideration by the Engineer. However, rejection of alternative methods suggested by the contractor shall not constitute a basis for claim against the Engineer.

The Work Plan shall show the layout, safety fence locations, and shall emphasize how the Contractor plans for temporary storage of materials to be used to install the scour protection. In addition, the Plan shall include details on the control, placement, and filling grout filled bags. Erosion and sediment controls, prepared in accordance with the project requirements, are required as well.

Quality Control Plan: The Contractor shall submit a Quality Control Plan to the Engineer for approval prior to the start of work. The Plan should include provisions for quality control and testing, preparation and submission daily field reports, products forms or receipts, and geosynthetic conformance testing as outlined in these specifications.

Accident Prevention Plan: The Contractor shall be responsible for maintaining site safety in accordance with, at a minimum, DelDOT and OSHA requirements for all items related to the installation and construction of scour protection. The Contractor shall submit for approval prior to the start of work its plan for accident prevention. The Plan shall comply with all provisions of this Contract and shall emphasize the protection and safety of the general public using the adjacent areas. The Plan shall show details of any barricades, warning signs, and equipment the Contractor intends to use in the implementation of the Accident Prevention Plan.

Materials:

Grout Filled Geotextile Bag:

1. Grout: Portland cement concrete shall consist of nine bags, 55.8 kg/m3 (94 lb per cubic yard) Type II Portland cement, air entrainment, 6 ± 1 percent mortar sand aggregate, and water so proportioned to provide a pumpable mixture. The 28 day minimum day strength shall be 24 140 kPa (3500 psi).
2. Bags: Fabric bags shall be made of high strength water permeable fabric of nylon or cordura. Each bag shall be provided with a self closing inlet valve, to accommodate insertion of the concrete hose. A minimum of two valves shall be provided for bags more than 6.1 m (20 ft) long. Seams shall be folded and double stitched.
3. Fabric: Fabric shall exhibit the following properties in both warp and fill directions:
   a. Tensile Strength, min. 70 kN/m (400lb/in) ASTM D 1682, Grab Method
   b. Tear Strength, min 400 N (90 lb) ASTM D 2262, Tongue Method

Construction Methods:

Mobilization and Demobilization: The Contractor shall mobilize sufficient personnel and equipment at the work site to begin required operations at the site. Upon successful completion of the work required as specified herein, the Contractor shall remove all construction equipment, materials, supplies, and debris from the site.

The Contractor shall install geotextile bags and fill with grout in accordance with the manufacturer's recommendations. Bags shall not be overfilled and shall be placed so as to facilitate interlocking between bags.

Bags placed around the revetment mattress shall be manipulated to fill voids between the revetment mattress and the existing abutments and provide a uniform stream bottom contour.

Method of Measurement:

The quantity of grout filled geotextile bags will be measured as the number of cubic yards pumped into the geotextile bags including the amount of grout remaining in the inlet valves.

Basis of Payment:

The quantity of grout filled geotextile bags will be paid for at the Contract unit price per cubic yard for the item as specified. Price and payment will constitute full compensation for divers, geotextile bags, grout, pumping, positioning bags, tidal influences, working underwater, and for all labor, inspection, equipment, tools and incidentals necessary to complete the work as specified.

Elements Paid for Separately:

Bid Item 203500 "Hydraulic Excavation"
Bid Item 269000 "Turbidity Curtain, Floating"
Bid Item 302005 "Graded Aggregate Base Course, Type B
Bid Item 302012 "Delaware No. 57 Stone"
Bid Item 601520 "Temporary Timber Mats"
Bid Item 602530 "Grout Repairs for Substructure"
Bid Item 602614 "Underwater Revetment Mattress"
Bid Item 712021 "Riprap, R-5"
Bid Item 712023 "Riprap, R-7"
Bid Item 713002 "Geotextile, Separation"
Bid Item 756000 "Sand"

605522 - URETHANE PAINT SYSTEM, EXISTING STEEL

Description:

This work consists of painting the entire existing steel structure as specifically indicated on the plans and in this item.

Materials:

All paint used on this structure shall be produced by a single manufacturer, and the coating system shall conform to the minimum requirements as noted below.

Total Removal Primer

Generic Type:	Zinc-rich, single-component, moisture-cured polyurethane
Vehicle Type:	Moisture-cured polyurethane
Volume of Solids:	60% Minimum
Pigment Type:	3.5 lbs/gal (0.42 kg/liter) Micaceous Iron Oxide/Zinc dust
Zinc/Micaceous Iron Oxide Content in Dry Film by Wt.:	83% Minimum
Coverage:	3 mils (75 µm) DFT minimum
VOC:	Not to Exceed 2.8 lbs/gal (0.335 kg/liter)
Weight Per Liter:	Minimum 22 lbs/gal (2.64 kg/liter)
Primer Performance:	No rusting, blistering or scribe undercutting when tested by salt fog in accordance with SSPC Paint 20.

Overcoat Primer or Intermediate Coat

Generic Type:	Micaceous iron oxide single-component, moisture-cured polyurethane.
Vehicle Type:	Moisture-cured polyurethane
Volume Solids:	60% minimum
Solids by Wt:	82% $\pm$ 2.0% minimum
Pigment Type:	4.0 lbs/gal (0.48 kg/liter) micaceous iron oxide
Color:	Tinted to distinguish from primer
Isocyanate:	Formulate with a moisture cure polyisocyanate diphenylmethane diisocyanate based prepolymer with an isocyanate content of 16.0 to 17.0 weight percent, an NCO equivalent weight of 247 to 263, and a viscosity of 1400 ± 200 cps @ 77°F (25°C).
Isocyanate Content:	9.6 ± 0.9 weight percent as determined by Kentucky method KM64-250.
Coverage:	3 mils (75 µm) DFT minimum
VOC:	Not to exceed 2.8 lbs/gal (0.335 kg/liter)
Weight per liter:	Minimum 16 lbs/gal (1.92 kg/liter)

Topcoat:

Generic Type: Two-component, aliphatic polyurethane
Vehicle Type: Acrylic aliphatic polyurethane

Resin: A hydroxyl bearing polyacrylic resin with a typical hydroxyl content of 4% and an average equivalent weight of 425 (both values at 100% resin solids). This resin will make up at least 95% of the polyol vehicle solids.

Curing Agent: A polyfunctional polyisocyanate resin based on Hexamethylene diisocyanate with an NCO content of 21.3 - 21.8% and an average NCO equivalent weight of 195.

Light Stabilizer: The base component (Component A) must contain 1% of a hindered amine light stabilizer. This is calculated from the resin solids of component A and Component B.

Initial Gloss: 80%(minimum) @ 60° per ASTM D523

Solids Content: Total solids of the mixed product will be 75.0 ± 2.0 percent by weight as determined by ASTM D 2369 using a 4 hour air dry time plus 1 hour oven dry at 110°F (43.3°C).

Pot Life: 3 hours minimum at 77°F (25°C) and 50% relative humidity

Color: As specified in the Plans

Coverage: 3 mils (75 µm) DFT minimum

VOC: Not to exceed 2.8 lbs/gal (0.335 kg/liter)

All M.I.O. (Micaceous Iron Oxide) filled products must conform to ASTM D5532, Type I and have a certification of conformance from the Raw Materials Manufacturer. Each single coat of paint shall be a color different from the others. The color of the primer and intermediate coat shall be at the Contractor's option, and shall provide contrast with the underlying substrate or previously applied pant. The color of the finish paint shall be as specified in the Contract Plans.

A moisture-cured polyurethane topcoat will be acceptable provided the manufacturer submits data showing a 70% minimum gloss after 24 months exposure in southern Florida on panels facing due south at 45° from the horizon on a color the same or similar to the ones in the Plans.

The coatings manufacturer shall supply, in writing, the minimum and maximum recoat times of the primer and intermediate coat. If the Contractor fails to complete the painting during these established time periods, the surface area shall be cleaned at the Contractor's expense if necessary as determined by the Engineer.

Basis of Acceptance – All components of the system (primer, intermediate and finish coats) will be accepted on the basis of the manufacturer's written certification that the batch(s) produced meets their product specification and this Item. In addition, the Contractor shall submit a 1 quart (liter) sample of each component of the system (primer, intermediate and finish coats) to the DelDOT Materials and Research Section (call (302) 760-2401 for details) 30 days prior to the start of painting. The samples submitted shall be from paint to be used on the bridge with the same batch numbers and shall be labeled with the manufacturer's name, product name, component part, batch number, date of manufacture, and the bridge on which it is to be used. The Department will perform testing on the paint submitted. The Department reserves the right to take random samples of the paint at anytime during the construction and application.

Only paint arriving on the site in new, unopened containers shall be used.

Containers of paint shall be labeled with the manufacturer's name, product name, component part, batch number, date of manufacture, and shelf life date. Paint in containers having expired shelf life dates shall be immediately removed from the work site.

Construction Methods:

All structural steel members, railings, fascia, downspouts and other miscellaneous steel items shall be cleaned and painted.

Surface Preparation – Surfaces to be cleaned shall be identified in the following manner:

Blast clean surfaces for total removal in accordance with Item 605533.

Blast cleaned surfaces shall be accepted by visual comparison to a project prepared standard. The Contractor shall prepare the project standard by cleaning a representative area on the structure that is being prepared for painting. The prepared standard shall generally conform to SSPC-Vis 1-89, "Visual Standard for Blast Cleaned Surface," Pictorial Standards A SP10, B SP10, C, SP10, and D SP10, as applicable, and shall be approved by the Engineer before the start of general cleaning work. More than one standard may be necessary if the cleaned steel differs significantly from the photographic standards due to the surface conditions or other factors. There shall be one standard per span of the bridge. Each standard shall be at least 1' x 1' (300 mm x 300 mm) in size, and shall be located in an area of the span that is accessible to, and approved by the Engineer.

The Contractor shall protect the project standards from corrosion and contamination throughout the duration of the work. Protection shall be by applying a clear coat of polyurethane or by other means. At the completion of the cleaning work, the project standard shall be recleaned and painted in accordance with the specification. If, in the opinion of the Engineer, the project standard becomes deteriorated or otherwise ineffective, it shall be re-established in accordance with this specification at no additional cost to the Department.

Painting –

Manufacturer's Instructions – At least two weeks prior to the start of work, the Contractor shall provide the Engineer with one copy of the paint manufacturer's current Technical Data and Materials Safety Data Sheets for the paint materials being furnished. Instructions, suggestions and precautions contained in these data sheets shall be followed to the extent that they do not contradict the provisions of this specification.

Specifications and Inspection Equipment – Prior to the start of and throughout the duration of work, the Contractor shall be required to supply the Engineer with the following:

One bound copy each of the SSPC surface preparation specifications SSPC-SP1, Solvent Cleaning, SSPC-SP11, Power Tool Cleaning to bare metal , and SSPC-SP10, Near-White Metal Blast Cleaning.

One bound copy of SSPC pictorial standard SSPC-Vis1-89, Visual Standard for Blast Cleaned Surfaces, SSPC-Vis3, Visual Standard for Power and Hand Tool Cleaning.

One bound copy of SSPC Paint Application Standard No. 2 (SSPC-PA2), Measurement of Dry Film Thickness with Magnetic Gages.

One Bachrach Sling Psychrometer (Includes air thermometer)

One set of US Weather Bureau Tables

Three (3) Surface Thermometers, 0-150°F (-18 to 66°C)

One Positector 6000 Electronic Dry Film Thickness Gage.

One spring micrometer and one roll per span of Testex X-Coarse Replica Tape

Atmospheric Conditions – Painting shall not be performed unless the following conditions are met:

The receiving surface is clean and free of "rustback" and free of condensation and visible moisture; and

The receiving surface and ambient air temperature shall be as recommended by the paint manufacturer, except that in no case shall the painting work be performed when the surface and ambient temperatures are less than 35°F (2°C) or greater than 100°F (38°C).

All surfaces shall meet the manufacturer's dew point requirements when painting is performed. For moisture-cured urethanes, a surface will be considered too wet to paint if a moist handprint is visible after the surface is touched.

No painting is to occur in the winter months between the dates of December 15 and March 15.

Mixing Paint – All paints shall be thoroughly mixed with mechanical mixers in accordance with the manufacturer's recommendations.

Solvent Restrictions – Thin only with approved manufacturer's thinner. Thinning is allowed only in strict accordance the manufacturer's recommendations and state VOC regulations. Unauthorized use of solvents shall result in recleaning and repainting the surface in accordance with this specification, at the Contractor's expense.

Paint Application – Paint coatings may be applied using brush, roller or spray methods, except the primer which shall be applied by spray methods.

Stripe coating with primer will be required on the following surfaces cleaned to bare metal. All welds, rivets, bolts, nuts, and edges of plates, angles, lattice, pieces or other shapes, and corners and crevices shall be "striped" with primer before the general primer coat is applied. All stripe painting will be performed using brush only. No other method will be allowed for stripe painting.

Complete protection against paint spatter, spillage, overspray, wind-blown paint, or similar releases of paint shall be provided. Covers, tarps, mesh and similar materials shall be placed around the work area to protect public and private property, pedestrian, vehicular, marine and other traffic, all portions of the bridge, waterways, and similar surrounding areas and property, upon, beneath, or adjacent to the structure.

Number of Coats –

Steel shall be painted with one coat of Primer, one coat of Intermediate coat, and one coat of topcoat.

Film Thickness – Paint shall be applied in sufficient quantity to produce the minimum dry film thickness specified under Material.

Painting Schedule – Primer shall be applied on the same day of the cleaning operation and before rusting occurs to the cleaned surface. Failure to apply primer to a cleaned surface within 8 hours shall result in recleaning the surface in accordance with this specification at no additional cost to the Department.

The intermediate paint shall be applied to the receiving surface within 14 days of the application of the primer, or within the manufacturer's recommended maximum recoat time, whichever is less.

The finish paint shall be applied to the receiving surface within 14 days of the application of the previous coat (intermediate), or within the manufacturer's recommended maximum recoat time for the intermediate coat, whichever is less. The finish paint color on all the fascia beams for the bridge shall be painted with paint from the same batch number and date of manufacture in order to avoid uneven paint color. If more than one batch of paint is needed to paint the fascias, then a natural break point such as the end of a span shall be used to change batch numbers.

Areas failing to meet the specified minimum dry film thickness shall be recoated with the same type of paint to produce at least the total dry film thickness required. Paint applied containing thinners, paint applied to contaminated surfaces, and paint applied contrary to this specification shall result in recleaning and repainting the surface. The work of recleaning and repainting, if required, shall be done by the Contractor to the satisfaction of the Engineer at no additional cost to the Department.

If a coat of anti-corrosive grease is applied to an area on the bridge (such as the bearings) then the grease shall be sprayed with the finish coat of the bridge paint being used provided that the bearing for the other areas that are designated to receive the grease have already been cleaned and painted.

Materials Storage – Paint in storage shall be protected from damage and maintained between 40°F (4°C) and 85°F (29°C), unless the coatings manufacturer requirements are more stringent. Paint not used before the expiration date shall be immediately removed from the project site,

Painting of Galvanized Steel –

All galvanized steel surfaces shall be painted with a moisture-cured aluminum paint that is designed to adhere to galvanized steel surfaces. The moisture-cured aluminum paint must meet the following requirements:

One-Coat System

Generic Type: Aluminum-filled aromatic moisture-cure urethane
Vehicle Type: Moisture-cured aromatic polyurethane
Pigment Type: Minimum 2 lbs/gal (0.240 kg/liter) non-leafing aluminum
Coverage: 2 mils (50 µm) DFT, minimum
VOC: Not to exceed 3.5 lbs/gal (0.42 kg/liter)
Weight per gallon: 9.2 lbs/gal (1.10 kg/liter)
Solids by volume: 52.0 $\pm$ 1.0%
Shelf life: 6 months minimum from date of shipment

Method of Measurement:

The quantity of painting will not be measured.

Basis of Payment:

The quantity of painting will be paid for at the Contract lump sum price. Price and payment will constitute full compensation for furnishing all materials, equipment necessary to complete the work, cost of providing protection against damage during paint application, for all labor, tools and necessary incidentals to complete the job.

Progress payments will be made based on percentage of the structure cleaned and painted in accordance with this specification.

605533 - CLEANING EXISTING STEEL STRUCTURES, HAZARDOUS BASE (L.S.)

Description:

This work consists of cleaning the entire existing steel structure as noted on the Plans; collection; stabilization; and transportation of the "spent material" (rust particles, paint particles and dust, material assumed to be hazardous waste), resulting from cleaning operations, to an approved disposal site(s). The work under this item shall be performed in accordance with these Special Provisions and attached Appendix A.

Prior to the beginning of paint removal work, the Contractor shall set forth in detail and submit to the Delaware Department of Transportation (hereinafter referred to as Department), for approval, the proposed containment system (mini-containment system when only a part of the structure is to be cleaned as required) for complete capture, containment, collection and disposal of the "spent material" generated from paint removal work and testing by an outside laboratory, approved by the Department. The system shall be in compliance with these specifications, State, United States Environmental Protection Agency (EPA) and Occupational Safety and Health Act (OSHA) and other regulatory agencies with jurisdiction, rules, regulations, standards and guidelines in effect while the work is in progress. Upon approval, the plan shall be implemented to capture, contain, collect, and dispose of all "spent material".

The Contractor shall not begin cleaning and/or blasting operation until he/she has submitted final documentation that he/she has an approved disposal site and permits for the handling, storing, and transporting of hazardous waste and nonhazardous waste; and shall be responsible to protect the environment, workers, and the public from toxic substances resulting from the paint removal operations.

Prior to beginning any steel structure repairs on this project, the Contractor will be required to pre-blast the entire steel structure to facilitate inspection and steel structure repair operations. Therefore, two cleaning operations will be required for this contract.

Pre-Bid Conference:

Prior to the bid opening, a date will be set if deemed necessary by the Contract Administration (bidder will be notified at the time of purchasing contract documents) for a pre-bid conference to alert the potential bidder to comply with the directives established by the OSHA, EPA and the State of Delaware during and after the execution of this item. It is recommended that the bidder (Prime Contractor) brings his/her Sub-Contractor to be engaged in removing the paint if he/she cannot perform the work of this item.

Materials:

The Contractor shall use recyclable metallic shot and metallic grit meeting the requirements of SSPC AB2 and SSPC AB3 as abrasive materials for removing paint.

Other removal and cleaning methods after approval may be used by the Contractor provided he/she can demonstrate that the proposed method satisfies all the safety and environmental requirements of this specification and provides a cleaned surface satisfactory to the Engineer.

Construction Requirements:

Containment System:

Prior to commencing any cleaning operations, the Contractor shall prepare a Cleaning Contaminant System for the capture, containment, collection and storage of the waste generated by the work, which includes abrasive blasting residue, spent blasting mediums, rust, paint particles, dust, etc.

The Containment System must be capable of containing the waste and resulting residue generated by the work. The Contractor shall strive to achieve total containment (100%); and is required to meet all Federal, State, City and Local regulations using the best available technology as applicable to each bridge site. The Containment System shall meet the requirements of SSPC Guide 6, Class 1A. Visible emisions in excess of SSPC Guide 6, Level 1 (one percent in the work day) shall be cause for immediate shut down until corrections are made.

While on the site, tarps shall be held securely in place, and kept sealed at all times during water blasting, paint removal and painting.

For bridges over water, the Containment System shall include a skimming boom consisting of a float with a skirt to collect floating debris. Also, an approved capturing device such as floating curtain, screen or tarp shall be placed under and down wind of the bridge to catch rust, sand and paint particles; and the waste material collected on the capturing device shall be cleaned daily.

Prior to commencing work the Contractor must submit working drawings of the proposed containment system to the Department within 14 days from Notice of Award. For bridges less than 23 feet (7 meters) in height, the submittals shall include necessary safety measurements such as safety harnesses, lifelines and lanyards meeting OSHA requirements in 29 CRF 1926.104. In no case shall the containment system, safety devices, or equipment encroach upon the minimum bridge clearances shown on the Plans, unless otherwise approved by the Engineer.

The following guidelines shall be followed by the Contractor in preparing the Containment Drawing Plans. However, the Contractor may submit for approval a self-contained and self supporting blast and recovery system as an alternative option for removing the paint:

1. Working drawings with Professional Engineer Seal shall be submitted by the Contractor meeting the requirements of Subsection 105.04 of the Standard Specifications.

2. The working drawings shall show Containment System in plan & elevation views including details of clips and hangers.

3. The working drawings shall indicate maximum permissible load of abrasive or waste permitted on the Containment System.

4. The working drawings shall indicate all restrictions on bridge.

5. Permanent attachments or fasteners to the bridge will not be permitted.

6. The working drawings shall show the location(s) of skimming boom(s) if the bridge is over water.

7. The working drawings shall identify all containment system components; and shall indicate all rigid framework, work platform and scaffolding.

8. All curtains, screens or tarps used for containment shall be weighted down.

9. No load shall be attached to the bridge railings.

With submission of the Containment System Drawing, the Contractor shall be required to develop and submit for approval an Effective Safety Program to be followed during the paint removal period. The Contractor's employees, before being engaged in paint removal work, must have proper training in accordance with the OSHA General Industry Standard.

The review and acceptance of the working drawings by the Department shall in no way relieve the Contractor of any responsibility for obtaining the required degree of capture, containment and collection.

Cleaning of Containment System must be properly maintained while work is in progress and shall not deviate from the approved working drawings without prior approval of the Engineer. Air within the containment structure shall be exhausted rapidly to maintain a slight negative pressure, so that outside air is drawn in through specifically designed openings rather than having contaminated air leaking from inside the containment. Also, sufficient fresh air must be circulated so that dust is reduced to enable good visibility for the operator. Public access to all rigging, scaffolding and the containment systems must be denied at all times.

Air Monitoring for PM 10 and TSP Lead:

The Contractor shall engage a consultant responsible for conducting air monitoring work during the operation of the paint removal period; monitoring shall be conducted on the area downwind of the lead control area. The qualification of the consultant shall be approved by the Department prior to his/her engagement in air monitoring service. The air quality standard shall be monitored in accordance with National Ambient Air Quality Standards (NAAQS). At a minimum this containment system shall achieve a SSPC level 1 Standard Emissions level.

Baseline Monitoring shall take place at the jobsite for a 3 consecutive day period and a minimum 8 hours per day in order to establish preconstruction background readings for the area involved. Sampling shall be taken during the same time periods in which lead removal will be performed. Longer sampling times may be required if the Contractor plans to work for more than 8 hours per day or if the schedule requires day and night work. Additional sampling or longer sampling times may be required depending on the work environment and shall be directed by the Engineer. Required sampling type shall be 2 (two) PM-10 and 2 (two) TSP-Lead with locations approved by the Engineer. During lead paint removal, air monitoring is to commence just prior to the start of any lead removal operation for a period of 10 consecutive working days at the worksite. Longer sampling times may be required if the Contractor plans on working for more than 8 hours per day or if the schedule requires day and night work. Required sampling type shall be PM-10 and TSP-Lead with locations approved by the Engineer. If the readings taken at the jobsite during lead paint removal are acceptable for the 10 working day sampling period, then air monitoring can be reduced or eliminated by direction of the Engineer. If problems with containment occurs as determined by visual assessment or visual emissions, then the Engineer can deem it necessary to have the air monitoring reinstalled at the jobsite at the Contractor's expense.

The acceptance level for PM 10 (particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) shall be 150 micrograms per cubic meter of air for 24-hour average concentration (450 micrograms per cubic meter of air over an eight-hour period assuming no emissions occur from the project for the remaining 16 hours).

The acceptance level for Total Suspensed Particulate Matter (TSP) lead emissions shall be 1.5 micrograms per cubic meter of air averaged over a calendar quarter of the year, which can be converted as noted below to achieve daily lead level allowance during the project operation.

DA = Daily Allowance ($\mu g/m^3$)

PD = Number of paint removal operation days anticipated in a 90-day period.

For example, if it is expected that 30 days out of 90 will be worked, the TSP lead emission criteria for each of those days would be 4.5 $\mu g/m^3$, over a 24-hour period (90/30 x 1.5). However, since the paint removal operation will not continue for the full 24 hours, this level of emissions can be increased using the following formula:

ADA = Adjusted Daily Allowance ($\mu g/m^3$)
H = Hours worked in 24 hours.

Using the above example, if the paint removal operation is continued for eight hours out of each 24-hour workday, the ADA will be 13.5 $\mu g/m^3$ (4.5 $\mu g/m^3$ x 24/8). Thus, 13.5 $\mu g/m^3$ could be emitted during the eight hours of work, provided no emissions occur during the remaining 16 hours.

When dust leaks are noted in the containment system, repairs shall be made as soon as possible.

If at any time during the execution of the work, the cleaning containment system fails to function at the required level of efficiency, the Contractor must immediately suspend all operations except those intended to minimize the adverse impact to the environment. Operations shall not resume until modification have been made to correct the cause of the failure.

The Contractor shall have a full time hygenist on the job site during lead paint removal activities to insure required hygene procedures are being followed.

Cleaning:

All structural steel surfaces shall be cleaned and free of all rust, rust scale, mill scale, paint or other foreign matter in accordance with the requirements of SSPC-SP10.

Should the Contractor elect to use wet or water-vapor sandblasting, the water shall contain 0.32 percent of sodium nitrate and 1.28 percent by weight of ammonium phosphate for the purpose of inhibiting the development of rust.

No visible lead containing residue, debris, or paint chips shall remain or be present outside the containment area upon the completion of the abatement cleanup. Visible lead containing residue, debris, or paint chips outside the containment area shall be cleaned up immediately.

The type of containment systems used when cleaning steel shall be Class 1A for abrasive blasting and Class 2P for Power Tool Cleaning as per SSPC - Guide 6 "Guide for Containing Debris Generated During Paint Removal Operations".

Collection, Storage and Disposal of Hazardous and Non-Hazardous Waste:

All waste discharged and collected from the Containment System must be protected in a manner so as to prevent migration of the waste into the environment; and the Contractor shall abide by all Federal and State regulations relating to collection, storage and disposal of the hazardous waste and solid waste.

The Contractor shall provide a clean up area with soap, water and container for collection and disposing of the hazardous waste at each work site. The Contractor shall obtain a permit for hauling the hazardous waste from the State Department of Natural Resources and Environmental Control (DNREC).

Each day the Contractor shall collect and contain waste material in sealed 55 gallon (208 liter) open head type drums (I.C.C. Specification 17-H). All drums shall be in new condition and approved for use by the Engineer. Drums shall be labeled with the words "HAZARDOUS WASTE" and tagged in accordance with all State regulations including bridge number, Contract number, Contractor's name, contents and the date when waste accumulation in the drum begins. No more than 29 drums of hazardous material shall be kept at the site of each bridge.

The waste to be placed in drums also includes all filters used in abrasive blasting equipment and vacuum power tools for removing hazardous and nonhazardous paint waste; these filters shall be removed when the Contract is complete. At the end of the Contract all such filters shall be removed from equipment used on the project and placed in drums with other hazardous waste for proper disposal.

At the end of each working day the Contractor shall haul the waste material contained and collected to an approved temporary secure accumulation site. This site must be approved by the Engineer and be maintained in a secured condition by the Contractor. Hauling of hazardous waste must be performed by a license hauler.

The accumulation site must be capable of preventing the migration of the lead contaminated waste material into the environment. The accumulation area must also provide protection from vandalism and unauthorized access by the general public. At the completion of the work and in the presence of the Engineer, the Contractor shall take representative samples of the accumulated residues collected to be analyzed for lead content.

The storage site must be capable of preventing the migration of the lead contaminated waste material into the environment. The storage area must also provide protection from vandalism and unauthorized access by the general public.

Samples exceeding 5 PPM (parts per million) according to the Toxicity Characteristics Leaching Procedure (TCLP) test shall be considered a hazardous waste and disposed of as hazardous waste. If the sample's toxicity level has dropped to 5 ppm or less, then the waste can be transported and disposed of as industrial waste, provided it is stabilized.

In order to stabilize the industrial waste (below the toxicity level), a slurry made from Portland Cement (10% of waste by volume) and water (50% of cement by volume) shall be added to the waste and thoroughly mixed at the disposal site by the licensed hazardous waste hauler. In no case shall blasting debris or dust collector waste be directly disposed of as an industrial waste. They shall either be stabilized or disposed of as a hazardous waste, irrespective of the results of the TCLP Test.

The samples shall be delivered to a laboratory approved by the Department for testing according to the Toxicity Characteristic Leaching Procedure (TCLP). Should test results indicate and if the contaminants listed in the following are above their respective regulatory limits, the residue shall be deemed a hazardous waste, and must be treated before disposal.

EPA Hazardous Waste No.	Contaminant	Case No.	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0

D006	Cadmium	7440-43-9	1.0
D007	Chromium	7440-47-3	5.0
D008	Lead	7439-92-1	5.0
D009	Mercury	7439-97-6	0.2
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0

The Contractor shall remove from the accumulation site all treated waste within 90 days from the date of accumulation; and be transported to an industrial dump facility approved by the Delaware Department of Natural Resources and Environmental Control for disposal of such waste. A copy of the completed waste manifest (signed and dated by the Contractor and the Engineer at the site) shall be forwarded to the Department.

Method of Measurement:

For item 605533, the quantity of cleaning existing steel structures will not be measured. Two cleaning operations will be required for this project in accordance with the Plans and this Special Provision.

Basis of Payment:

For item 605533, the quantity of cleaning existing steel structures will be paid for at the Contract lump sum and shall include all work, mobilizations, and materials necessary to conduct an additional pre-blast of all portions of the structure prior to the final cleaning operation prior to painting.

Price and payment shall constitute full compensation for furnishing and installing all materials, working drawings and Professional Engineer's service, Containment System, collection and temporary storage of the waste material as required, air monitoring service including consulting services, testing materials for contaminants, cleaning the structure, revisions and resubmissions of the Containment Plan and or Systems that may be required during the execution of the work, for providing respiratory protection and protective clothing to the worker and Departments employee at the time of inspection, hygiene facilities, for stabilizing the hazardous material and transporting and disposing of the stabilized waste complying with all the requirements as described herein in these special provisions, for all labor, equipment, tools and necessary incidentals to complete the work.

NOTE

The latest issue, revision, or amendment of the references noted below shall govern in execution of this item unless otherwise noted. **If there is a conflict between the attached Appendix A of this Special Provisions and the references noted below, the latter shall prevail**.

1. Steel Structures Painting Council (SSPC) Standards

SSPC-AB2 Specification for Cleanliness of Recycled Ferrous Metal Abrasive

SSPC-AB3 Specification for Newly Manufactured Steel Abrasive.

SSPC-QP 1	Standard Procedure for Evaluating Qualifications of Painting Contractors
SSPC Guide 6I	Guide for Containing Debris Generated During Lead Paint Removal Operations
SSPC Guide 7 (DIS)	Guide for the Disposal of Lead-Contaminated Surface Preparation Debris

2. U.S. Government Code of Federal Regulations

- 29 CFR, Part 1926.62, Safety and Health Regulations for Construction
- 40 CFR, Subchapter I, "Solid Wastes" (parts 260-263, and 268)

3. American National Standards Institute (ANSI)

ANSI/ASC Z9.4 For Exhaust Systems Abrasive Blasting Operations -- Ventilation and Safe Practice

4. State of Delaware

- 7 Del. C., chapter 63 - Hazardous Waste Management Act
- The Delaware Regulations Governing Hazardous Waste (DRGHW)
- 7 Del. C., Chapter 60 - Delaware Water and Air Resources Act
- The Delaware Regulations Governing Solid Waste (DRGSW)

SPECIAL NOTICE TO CONTRACTORS

The following documentation will be required with the Bid Proposal Form. If this documentation is not submitted with the bid, the bid will be considered Non-responsive.

Proof is required that the Prime Contractor, if he/she is performing the cleaning/painting operation, and any cleaning/painting Subcontractors are certified by the Steel Structures Painting Council (SSPC) Painting Contractor Certification Program (PCCP) QP-1 and QP-2. Such certification shall be for the duration of the project.

APPENDIX A

OCCUPATIONAL SAFETY AND HEALTH STANDARD FOR OCCUPATIONAL EXPOSURE TO LEAD DURING CONSTRUCTION

The regulations specified under the following topics and as described herein shall be followed by the Contractor, engaged in removing and cleaning lead base paint from the steel structures. This Appendix is considered as part of the Special Provisions for Items 605629 and 605533 - Cleaning Existing Steel Structures and 605614 and 605618 - Cleaning Existing Steel Structures with Vacuum Power Tools.

.01 Scope and Application

.02 Definitions

.03 Permissible Exposure Limit (PEL)

.01 Scope and Application

A. This Appendix applies to occupational exposure to lead of every employee engaged in construction work. Each employer shall protect the employment and places of employment of each employee engaged in construction work by complying with the Appendix.

B. Compliance with this Appendix does not preclude or preempt the applicability of any other regulations or standards.

.02 Definitions

For the purpose of this Appendix certain words and terms are defined as follows.

A. Lead

(1) "Lead" means metallic lead, all inorganic lead compounds, and organic lead soaps.
(2) "Lead" does not include any other organic lead compounds.

B. "PEL" means Permissible Exposure Limit.

C. "TWA" means Time Weighted Average.

D. All references to "the Employer" herein shall mean "the Contractor", and all references to the Employee(s) shall mean "the Department's and Contractor's Employees".

.03 Permissible Exposure Limit (PEL)

A. The employer shall ensure that no employee is exposed to lead at concentrations greater than 50 micrograms per cubic meter of air averaged over an 8-hour period.

B. When an employee is exposed to lead for more than 8 hours in any work day, the employer shall use the following formula to reduce the permissible exposure limit, as a time weighted average (TWA) for that day: Maximum permissible limit (in micrograms/cubic meter) = 400 divided by hours worked in the day.

C. Respirators. When respirators are used to supplement engineering and work practice controls to comply with the PEL and in accordance with the requirements of Regulation .06, the employer, for the purpose of determining compliance with the PEL, may:

(1) Consider employee exposure to be at the level provided by the protection factor of the respirator for those periods the respirator is worn; and

(2) Average those periods with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

.04 Initial Determination and Exposure Monitoring

A. General

(1) For the purpose of this regulation, employee exposure is that exposure which would occur if the employee were not using a respirator.

(2) Personal Samples.

(a) With the exception of monitoring under Section C, below, the employer shall collect personal samples for the entire time during the shift when lead exposure may occur.

(b) The personal samples shall:

(i) Include at least one sample for every job classification in each work area during each shift; and

(ii) Be representative of the monitored employee's regular, daily exposure to lead.

B. Initial Determination.

(1) An employer having a jobsite covered by this chapter shall determine before the beginning of potential exposure to lead if an employee may be exposed to lead at or above the PEL level.

(2) Written record.

(a) The employer shall:

(i) Make a written record of the determination; and

(ii) Post the record in a place accessible to employees.

(b) At a minimum, the record shall include:

(i) The information specified in Section C, below;

(ii) The date of determination;

(iii) Location of the jobsite;

(iv) Process;

(v) Materials;

(vi) Location within the jobsite; and

(vii) The name and social security number of employees monitored.

C. Basis of Initial Determination.

The employer shall base an initial determination on any of the following, relevant considerations:

(1) Information, observation, calculations, or anticipated operations which indicate employee exposure to lead;

(2) Previous measurements of airborne lead and analytical methods meeting the criteria of Section I, below; and

(3) Other indications of potential lead exposure.

D. Positive Initial Determination and Initial Monitoring.

(1) When a determination conducted under Sections B and C, above, shows the possibility of employee exposure at or above the PEL level, the employer shall conduct exposure monitoring immediately at the start of the operation which may involve lead exposure.

(2) The monitoring shall be representative of the exposure for each employee in the workplace who is exposed to lead.

(3) When the type of jobsite, process, and materials involved has not changed, measurements of airborne lead, taken in accordance with Section I, below, and made during the preceding 12 months may by used to satisfy this requirement.

E. Negative Initial Determination.

When the employer determines, in accordance with Sections B and C, above, that no employee is exposed to airborne concentrations of lead at or above the PEL level, the employer shall make a written record of the determination in accordance with Section B.

F. Frequency.

Except as required by Section G, below, when the initial determination or subsequent monitoring reveals employee exposure:

(1) Above the PEL, the employer shall conduct monitoring quarterly until at least two consecutive measurements, taken at least 7 days apart, are at or below the PEL.

G. Additional Monitoring.

(1) When there is either a production, jobsite, material, process, control, or personnel change which may result in new or additional lead exposure or any other reason to suspect a change, which may result in new or additional exposures to lead, the employer shall conduct additional monitoring in accordance with this chapter.

(2) When an employee complains of symptoms which may be attributable to exposure to lead, the employer shall conduct personal monitoring representative of the exposure to each employee in the affected job classification or performing the same operation who may be exposed to lead.

H. Employee Notification.

(1) Within 5 working days of the receipt of any monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposure.

(2) Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the PEL, the employer shall include in the written notice:

(a) A statement that the PEL was exceeded; and

(b) A description of the corrective action that has been, or will be, taken to reduce exposure to a level at or below the PEL.

I. Accuracy of Measurement.

The employer shall use a method of monitoring and analysis which has an accuracy, to a confidence level of 95 percent, of not less than plus or minus 20 percent for airborne concentrations of lead equal to or greater than 50 micrograms/cubic meter averaged over an 8-hour period.

.05 Methods of Compliance

A. Engineering and Work Practice Controls.

(1) When any employee is exposed to lead above the PEL, the employer shall implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead, except to the extent that the employer can demonstrate that these controls are not feasible.

(2) When the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposure to a level at or below the PEL, the employer shall:

(a) Use them to reduce exposure to the lowest feasible level; and

(b) Supplement them by the use of respiratory protection which complies with the requirements of Regulation .06.

B. Compliance Program

(1) Each employer shall establish and implement a written compliance program to reduce exposure.

(2) Written Program. The written compliance program shall, at a minimum, include:

(a) A description of each operation in which lead is expected, including

(i) Equipment used,

(ii) Materials used,

(iii) Controls in place,

(iv) Crew size,

(v) Employee job responsibilities,

(vi) Operating procedures, and

(vii) Maintenance practices;

(b) A description of the specific means that will be employed to achieve compliance;

(c) A report of the technology considered in meeting the PEL;

(d) A work practice program which includes items required under Regulations .07,.08, and .09;

(e) The administrative control schedule required by Section C, if applicable; and

(f) Other relevant information.

(3) Written programs shall be:

(a) Submitted upon request to the Department; and

(b) Available at the jobsite for examination and copying by the Department, any affected employee, or authorized employee representative.

(4) At least every 6 months, the employer shall:

(a) Review the written compliance program; and

(b) If necessary, revise it to reflect the current status of the program.

C Administrative Controls.

If administrative controls are used as a means of reducing employee TWA lead exposure, the employer shall establish and implement a job rotation schedule which includes:

(1) The name or identification number of each affected employee;

(2) The duration and the exposure level at each job or work station where an affected employee is located; and

(3) Any other information which may be useful in assessing the reliability of administrative controls in reducing exposure to lead.

.06 Respiratory Protection

A. General.

(1) When this chapter requires the use of respirators, the employer shall:
(a) Provide respirators that comply with the requirements of this regulation, at no cost to the employee; and

(b) Ensure their use.

(2) Respirators shall be used:

(a) During the time period necessary to install or implement engineering or work practice controls;

(b) In a work situation in which engineering and work practice controls are not sufficient to reduce exposure to a level at or below the PEL; and

(c) Whenever an employee requests a respirator.

B. Respirator Selection.

(1) When a respirator is required under this chapter, the employer shall select the appropriate respirator or combination of respirators in accordance with this section from Table I. Respiratory Protection for Lead Aerosols.

(2) Powered Air-Purifying Respirators: The employer shall provide a powered air-purifying respirator instead of the respirator specified in Table I Respiratory Protection for Lead Aerosols whenever:

(a) An employee chooses to use this type of respirator; and

(b) This respirator will provide adequate protection to the employee.

(3) The employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part II.

C. Respirator Usage.

(1) The employer shall ensure that the respirator issued to the employee:

(a) Exhibits minimum facepiece leakage; and

(b) Is fitted properly.

(2) Fit Test.

(a) For each employee wearing a negative pressure respirator, the employer shall perform either a quantitative or qualitative face fit test:

(i) At the time of initial fitting; and

(ii) Minimally, every 6 months after that.

(b) The qualitative fit test:

(i) May be used only to test the fit of a half-mask respirator when it is otherwise permitted to be worn; and

(ii) Shall be conducted in accordance with the directive set in 29 CFR 1926.62.

(c) The tests shall be used to select facepieces that provide the protection prescribed in Table I. Respiratory Protection for Lead Aerosols.

TABLE I. RESPIRATORY PROTECTION FOR LEAD AEROSOLS

Airborne concentration of lead or condition of use	Required respirator[1]
Not in excess of 0.5 milligram/cubic meter (10X PEL).	Half-mask, air-purifying respirator Equipped with high efficiency filters. [2,3]
Not in excess of 1.25 milligram/cubic meter (25 x PEL)	Hood or helmet supplied air respirator operated in a continous flow mode.
Not in excess of 2.5 milligram/cubic meter (50X PEL). with	(1) Full facepiece, air-purifying respirator with high efficiency filters.[3] (2) Any powered, air-purifying respirator high efficiency filters.[3]
Not in excess of 50 milligram/cubic meter (1000x PEL).	Half-mask, supplied-air respirator operated in positive-pressure mode[2].
Not in excess of 100 milligrams/cubic meter (2000X PEL).	Supplied-air respirators with full facepiece, hood, helmet, or suit, operated in positive pressure mode.
Greater than 100 milligrams/cubic meter, unknown concentration or fire fighting.	Full facepiece, self-contained breathing apparatus operated in positive-pressure mode.

[1]Respirators specified for high concentrations can be used at lower concentrations of lead.

[2]Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.

[3]A high efficiency particulate filter means 99.97 percent efficiency against 0.3 micron size particles.Certain Specific Type CE blast helmets can be used in atmospheres that are 1000x PEL.

(3) If an employee exhibits difficulty in breathing during the fit test or during use, the employer shall make available to the employee an examination in accordance with Regulation .11A(2) to determine whether the employee can wear a respirator while performing the required duty.

D. Respirator Program.

(1) The employer shall institute a respiratory protection program in accordance with the applicable section(s) of 29 CFR 1926.62, 29 CFR 1926.1127, and 29 CFR 1910.134.

(2) The employer shall:

(a) Permit an employee who uses a filter respirator to change the filter elements when an increase in breathing resistance is detected;

(b) Use identification of filters, cartridges and canisters with NIOSH color coded approved labels as required.

(c) Maintain an adequate supply of filter elements for this purpose; and

(d) Permit an employee who wears a respirator to leave the work area to wash his or her face and respirator facepiece when necessary to prevent skin irritation associated with respirator use.

(e) Record Keeping - Records must be kept and available in accordance with 29CFR 1910, 20 and include medical evaluation, fit testing, and a copy of the respiratory protection program.

.07 Protective Work Clothing and Equipment

A. Provision and Use.

When an employee is exposed to lead above the PEL, without regard to the use of respirators, or when the possibility of skin or eye irritation exists, the employer shall:

(1) Provide, at no cost to the employee, appropriate protective work clothing and equipment, such as, but not limited to:

(a) Coveralls or similar full-body work clothing:

(b) Shoes or disposable shoe coverlets, gloves, and hats;

(c) Face shields, vented goggles, or other appropriate protective equipment which complies with the applicable section(s) of 29 CFR 1926.62.

(2) Ensure that the employee uses the appropriate protective clothing and equipment.

B. Cleaning and Replacement.

The employer shall:

(1) Provide the protective clothing required in Section A -

(a) In a clean and dry condition,

(b) Daily to an employee whose exposure level, without regard to a respirator, is over 200 micrograms/cubic meter of lead as an 8-hour TWA, and

(c) At least weekly to other employees;

(2) Provide for the cleaning, laundering, or disposal of protective clothing and equipment required by Section A;

(3) Repair or replace required protective clothing and equipment as needed to maintain their effectiveness;

(4) Ensure that employees remove all protective clothing:

(a) At the completion of a work shift, and

(b) Only in designated change areas;

(5) Ensure that contaminated protective clothing which is to be cleaned, laundered, or disposed of, is placed in a closed container which:

(a) Is located in the designated change area, and

(b) Will prevent dispersion of lead;

(6) Inform, in writing, any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead;

(7) Ensure that a container required by Section B(5), above, is labeled as follows:

CAUTION: CLOTHING CONTAMINATED WITH LEAD. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS; and

(8) Prohibit the removal of lead from protective clothing or equipment by blowing, shaking, or any other means which disperses lead into the air.

.08 Housekeeping

A. Surfaces.

An employer shall maintain all surfaces as free as practicable of accumulations of lead.

B. Cleaning Floors.

(1) An employer shall vacuum floors and other surfaces where lead accumulates.

(2) When vacuuming or other equally effective methods are not feasible, an employer shall use wet methods, including wet sweeping, wet shovelling, or wet brushing.

(3) Floors and other surfaces where lead accumulates may not be cleaned by the use of compressed air.

(4) An employer may use dry methods only when vacuuming and wet methods are not practicable.

C. Vacuuming.

When vacuuming methods are used, the employer shall ensure that the vacuums are equipped with HEPA filters are used and emptied in a manner which minimizes the re-entry of lead into the workplace.

.09 Hygiene Facilities and Practices.

A. For the purpose of this regulation, employee exposure is that exposure which would occur without regard to the use of a respirator.

B. The employer shall ensure that in an area where employees are exposed to lead above the PEL:

(1) Neither food nor beverage is present or consumed;

(2) Tobacco products are not present or consumed; and

(3) Cosmetics are not applied.

C. Designated Change Areas**.**

(1) The employer shall provide clean designated change areas for employees who work in areas where their airborne exposure to lead is above the PEL.

(2) The employer shall ensure that designated change areas are equipped with separate storage facilities for protective work clothing and equipment and for street clothes, sufficient to prevent cross-contamination.

D. Washing Facilities.

(1) The employer shall ensure that employees who work in areas where their airborne exposure to lead is above the PEL, shower or wash at the end of the work shift.

(2) The employer shall provide washing facilities in accordance with the applicable section(s) of 29 CFR 1926.62.

(3) The employer shall ensure that employees who are required to shower or wash pursuant to Section D(1) do not leave the jobsite wearing any clothing or equipment worn during the work shift.

E. Food and Beverage Consumption Areas.

The employer shall:

(1) Provide employees who work in areas where their airborne exposure to lead is above the PEL with food and beverage consumption areas:

(a) Sufficiently removed from the affected work area; and

(b) Readily accessible to employees; and

(2) Ensure that employees who work in areas where their airborne exposure to lead is above the PEL, wash their hands and face prior to eating, drinking, smoking, or applying cosmetics.

(3) Ensure that employees who work in areas where their airborne consumption areas with protective work clothing or equipment unless surface lead dust has been removed by vacuuming or other cleaning methods.

F. Lavatories.

The employer shall provide an adequate number of lavatory facilities which comply with the applicable section(s) of 29 CFR 1926.62.

.10 Medical Surveillance Program.

A. General.

(1) The employer shall institute a medical surveillance program for all employees who are or may be exposed above the PEL level. A blood test to determine the lead level is required for all employees before engaged in operation of removing/cleaning the paint. The Department is responsible for its employees for blood test; however, the Contractor shall be responsible for his workers for such test.

(2) The employer shall ensure that all medical examinations and procedures are performed by, or under the supervision of, a licensed physician.

(3) The employer shall provide the required medical surveillance, as set forth in Regulation .11:

(a) Without cost to employees, and

(b) At a reasonable time and place.

B. Biological Monitoring.

(1) Blood Lead and ZPP or FEP Level Sampling and Analysis: The employer shall make available to each employee covered under Section A(1), above, biological monitoring in the form of blood sampling and analysis for:

(a) Lead; and

(b) Zinc protoporphyrin (ZPP), or Free erythocite protoporphyin (FEP) levels.

(2) The biological monitoring shall be provided on the following schedule:

(a) Before assignment, when an employee is being assigned for the first time to an area in which airborne concentrations of lead are at or above the PEL level;

(b) At least every 2 months during the first 6 months to each employee covered under Section A(1), above, after that, every 6 months;

(c) At least every 2 months for each employee whose last blood lead sampling and analysis indicated a blood lead level at or above 40 micrograms/100g of

whole blood, until two consecutive blood samples and analysis indicate a blood lead level below 40 micrograms/100g of whole blood;

(d) At least monthly during the removal period of each employee removed from exposure to lead due to an elevated blood lead level; and

(e) At the termination of employment.

(3) Follow-up Blood Sampling Tests.

When the results of a blood lead level test indicate that an employee's blood lead level exceeds the numerical criteria for medical removal under Regulation .12A(1), the employer shall provide a second (follow-up) blood sampling test within 2 weeks after receiving the results of the first blood sampling test.

(4) Accuracy of Blood Lead Level Sampling and Analysis.

Blood lead level sampling and analysis provided pursuant to these regulations shall;

(a) Have an accuracy, to a confidence level of 95 percent, within plus of minus 15 percent or 6 micrograms/100ml, whichever is greater; and

(b) Be conducted by a laboratory which:

(i) Is licensed by the Centers for Disease Control (CDC), United States Department of Health and Human Services, or

(ii) Has received a satisfactory grade in blood lead proficiency testing from CDC in the prior 12 months.

(5) Employee Notification.

Within 5 working days after receiving biological monitoring results, the employer shall notify in writing:

(a) Each employee of their blood lead level; and

(b) Each employee whose blood lead level exceeds 40 micrograms/100g, that this chapter requires temporary medical removal with Medical Removal Protection benefits when an employee's blood lead level exceeds the numerical criterion for medical removal under Regulation .12A(1).

.11 Medical Examinations and Consultations

A. Frequency.

The employer shall make available medical examinations and consultations to each employee covered under Regulation .10A(1) according to the following schedule:

(1) Immediately, for each employee for whom a blood sampling test conducted at any time during the preceding 12 months indicated a blood lead level at or above 40 micrograms/100g;

(2) As soon as possible, upon notification by an employee that:

(a) The employee has developed signs or symptoms commonly associated with lead intoxication,

(b) The employee desires medical advice concerning the effects of current or past exposure to lead on the employee's ability to procreate a healthy child, or

(c) The employee has demonstrated difficulty in breathing during a respirator fit test or during respirator use; and

(3) As medically appropriate for each employee who was either:

(a) Removed from exposure to lead due to a risk of sustaining material impairment to health, or

(b) Otherwise limited pursuant to a final medical determination.

B. Content.

Medical examinations made available pursuant to Section A(1), above, shall include all of the following elements:

(1) A detailed work history and a medical history, with particular attention to:

(a) Past lead exposure (occupational and non-occupational),

(b) Personal habits (smoking, hygiene), and

(c) Past gastrointestinal, hematologic, renal, cardiovascular, reproductive, and neurological problems;

(2) A thorough physical examination, with particular attention to teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems;

(3) Pulmonary status, if respiratory protection will be used;

(4) A blood pressure measurement;

(5) A blood sample and analysis which determines:

(a) Blood lead level which meets the requirements of Regulation .10B(4).

(b) Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology,

(c) Zinc protoporphyrin or free erythocite protoporphyrin,

(d) Blood urea nitrogen, and

(e) Serum creatinine;

(6) A routine urinalysis with microscopic examination; and

(7) Any laboratory or other test which the examining physician deems necessary by sound medical practice.

C. The content of medical examinations made available pursuant to Section A(2) and (3), above, shall:

(1) Be determined by an examining physician; and

(2) If requested by an employee, include pregnancy testing or laboratory evaluation of male fertility.

D. Multiple Physician Review Mechanism

(1) If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee under this chapter, the employee may designate a second physician to:

(a) Review any findings, determinations, or recommendations of the initial physician; and

(b) Conduct the examinations, consultations, and laboratory tests the second physician deems necessary to facilitate this review.

(2) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation pursuant to this chapter.

(3) The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within 15 days after receipt of the foregoing notification, or receipt of the initial physician's written opinion, whichever is later:

(a) The employee informing the employer that he or she intends to seek a second medical opinion; and

(b) The employee initiating steps to make an appointment with a second physician.

(4) If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, the employer and the employee shall ensure that efforts are made for the two physicians to resolve any disagreement.

(5) If the two physicians have been unable to reach agreement quickly, the employer and the employee, through their respective physicians, shall designate a third physician to:

(a) Review any findings, determinations, or recommendations of the prior physicians; and

(b) Conduct the examinations, consultations, and laboratory tests, and engage in discussions with the prior physicians that the third physician deems necessary to resolve disagreement of the prior physicians.

(6) The employer shall act consistently with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

E. Information Provided to Examining and Consulting Physicians.

(1) The employer shall provide the initial physician conducting a medical examination or consultation under this chapter the following information:

(a) A copy of this chapter;

(b) A description of the affected employee's duties as they relate to the employee's lead exposure;

(c) The employee's exposure level or anticipated exposure level to lead and to any other toxic substance (if applicable);

(d) A description of personal protective equipment used, or to be used;

(e) Prior blood lead determinations; and

(f) Prior written medical opinions concerning the employee which are in the employer's possession or control.

(2) The employer shall provide the foregoing information to a second or third physician conducting a medical examination or consultation under this chapter upon request either by the second or third physician, or by the employee.

F. Written Medical Opinions.

(1) The employer shall obtain and furnish to the employee a copy of a written medical opinion from each examining or consulting physician which contains the following information:

(a) The physician's opinion as to whether the employee has any detected medical condition which would place the employee at increased risk of material impairment of the employee's health form exposure to lead,

(b) Any recommended special protective measures to be provided to the employee,

(c) Limitations to be placed upon the employee's exposure to lead,

(d) Any recommended limitation upon the employee's use of respirators, including, if a physician determines that the employee cannot wear a negative pressure respirator, a determination of whether the employee can wear a powered air purifying respirator, and

(e) The results of the blood lead determinations;

(2) The employer shall instruct each examining and consulting physician:

(a) Not to reveal either in the written opinion, or in any other means of communication with the employer, any finding, including laboratory results, or diagnosis unrelated to an employee's occupational exposure to lead, and

(b) To advise the employee of any medical condition, occupational or non-occupational, which dictates further medical examination or treatment.

G. Alternate Physician Determination Mechanism.

The employer and the employee or authorized employee representative may agree to use any expeditious alternate physician determination mechanism in place of the multiple physician review mechanism provided by this chapter, provided that the alternate mechanism satisfies the other requirements contained in this chapter.

H. Chelation.

(1) The employer shall ensure that any person whom he retains, employs, supervises, or controls does not engage in prophylactic chelation of any employee at any time.

(2) If therapeutic or diagnostic chelation is to be performed by any person in Section H(1), above, the employer shall ensure that:

(a) It is done:

(i) Under the supervision of a licensed physician,

(ii) In a clinical setting,

(iii) With thorough and appropriate medical monitoring; and

(b) The employee is notified in writing before its occurrence.

.12 Medical Removal Protection

A. Temporary Medical Removal and Return of an Employee.

(1) Temporary Removal Due to Elevated Blood Lead Levels.

The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that:

(a) A periodic and a follow-up blood sampling test conducted pursuant to Regulations .10 and .11 indicates that the employee's blood lead level is at or above 50 micrograms/100g; or

(2) Temporary Removal Due to a Final Medical Determination

(a) For the purposes of Section A(2), the phrase "final medical determination" means the outcome of either the multiple physician review mechanism or the alternate medical determination mechanism used pursuant to the medical surveillance provisions in Regulation .11, above.

(b) The employer shall remove an employee from work having an exposure to lead at or above the PEL level on each occasion that a final medical

determination results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material health impairment from exposure to lead.

(c) When a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to lead, the employer shall implement the recommendations and act consistently with it.

(3) Return of the Employee to Former Job Status.

(a) The employer shall return an employee to his or her former job status in accordance with the following schedule:

(i) For an employee removed pursuant to Section A(1), when two consecutive blood sampling tests taken at least one month apart indicate that the employee's blood lead level is at or below 40 micrograms/100g of whole blood;

(ii) For an employee removed pursuant to Section A(2), when a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk of material health impairment from exposure to lead.

(b) For the purposes of this subsection, the requirement that an employer return an employee to the employee's former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.

(4) Removal of Other Employee Special Protective Measures or Limitations.

The employer shall remove any limitations placed on an employee or end any special protective measures provided to an employee pursuant to a final medical determination when a subsequent final medical determination indicates that the limitations or special protective measures are no longer necessary.

(5) Employer Options Pending a Final Medical Determination.

When a multiple physician review mechanism, or alternate medical determination mechanism used pursuant to Regulation .11, has not yet resulted in a final medical determination with respect to an employee, the employer shall act as follows:

(a) Removal. The employer may remove the employee from exposure to lead, provide special protective measures to the employee, or place limitations upon the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status.

(b) Return. The employer may return the employee to his or her former job status, end any special protective measures provided to the employee, and remove any limitations placed upon the employee, consistent

with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status, with two exceptions:

(i) If the initial removal, special protection, or limitations of the employee resulted from a final medical determination which differed from the findings, determinations, or recommendations of the initial physician; or

(ii) If the employee has been on removal status for the preceding 18 months due to an elevated blood lead level, the employer shall await a final medical determination.

B. Medical Removal Protection Benefits.

(1) Definition of Medical Removal Protection Benefits.

For the purpose of this section, the requirements that an employer provide medical removal protection benefits means that an employer shall maintain the earnings, seniority, and other employment rights and benefits of an employee as though the employee had not been removed from normal exposure to lead or otherwise limited.

(2) Provision of Medical Removal Protection Benefits.

The employer shall provide to an employee up to 18 months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this chapter.

(3) Follow-up Medical Surveillance During the Period of Employee Removal or Limitation.

During the period of time that an employee is removed from normal exposure to lead, or otherwise limited, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to this regulation.

(4) Workers' Compensation Claims.

If a removed employee files a claim for workers' compensation payments for a lead-related disability:

(a) The employer shall continue to provide medical removal protection benefits pending disposition of the claim;

(b) To the extent that an award is made to the employee for earnings lost during the period of removal, the employer's medical removal protection obligation shall be reduced by the amount of the award; and

(c) The employer shall receive no credit for workers' compensation payments received by the employee for treatment-related expenses.

(5) Other Credits.

The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives:

(a) Compensation for earnings lost during the period of removal either from a publicly or employer-funded made possible by virtue of the employee's removal.

(b) Income from employment with another employer compensation program; or

(6) Employees Whose Blood Lead Levels Do Not Adequately Decline Within 18 Months of Removal.

(a) The employer shall take the measures prescribed by Section B(6)(b) with respect to any employee:

(i) Removed from exposure to lead due to an elevated blood lead level; and

(ii) Whose blood lead level has not declined within the past 18 months of removal so that the employee has been returned to the employee's former job status.

(b) The employer shall:

(i) Make available to the employee a medical examination pursuant to this chapter to obtain a final medical determination with respect to the employee;

(ii) Ensure that the final medical determination obtained indicates whether the employee may be returned to his or her former job status, and if not, what steps should be taken to protect the employee's health;

(iii) When the final medical determination has not yet been obtained, or once obtained indicates that the employee may not yet be returned to the employee's former job status, continue to provide medical removal protection benefits to the employee until either the employee is returned to former job status, or a final medical determination is made that the employee is incapable of ever safely returning to the employee's former job status.

(c) When the employer acts pursuant to a final medical determination which permits the return of the employee to the employee's former job status despite what would otherwise be an unacceptable blood lead level, later questions concerning removing the employee again shall be decided by a final medical determination.

(d) The employer need not automatically remove the employee pursuant to the blood lead level removal criteria provided by this regulation.

(7) Voluntary Removal or Restriction of An Employee.

Where an employer, although not required by this regulation to do so, removes an employee from exposure to lead or otherwise places limitations on an employee due to the effects of lead

exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by Section B(2).

.13 Employee Information and Training

A. Training Program

(1) Each employer who has a jobsite in which there is a potential exposure to airborne lead at any level shall inform employees of this chapter.

(2) The employer shall:

(a) Institute a training program for employees subject to:

(i) Lead exposure at or above the action level, or

(ii) The possibility of skin or eye irritation; and

(b) Ensure their participation in the training.

(3) The employer shall provide initial training for those employees covered by Section A(2), above, before the time of initial job assignment.

(4) The training program shall be repeated at least annually for each employee.

(5) The employer shall ensure that each employe is informed of:

(a) The content of this chapter;

(b) The specific nature of the operations which could result in exposure to lead above the action level;

(c) The purpose, proper selection, fitting, use, and limitation of respirators;

(d) The purpose and a description of:

(i) The medical surveillance program, and

(ii) The medical removal protection program;

(e) The adverse health effects associated with excessive exposure to lead, with particular attention to the adverse reproductive effects on both males and females;

(f) The Engineering controls and work practices associated with the employee's job assignment;

(g) The contents of any compliance program in effect; and

(h) Instructions to employees that chelating agents should not:

(i) Routinely be used to remove lead from their bodies, and

(ii) Be used at all except under the direction of a licensed physician.

(6) The employer shall:

(a) Obtain and include as part of the training program, the materials pertaining to the Federal Occupational Safety and Health Act, the regulations issued under the Act, and this chapter; and

(b) Distribute them to employees.

B. Access to Information and Training Materials

(1) The employer shall make readily available to all affected employees a copy of this chapter.

(2) The employer shall provide to the Department upon request, all materials relating to the employee information and training program.

.14 Signs

A. General

(1) The employer may use signs required by other statutes, regulations, or ordinances in addition to, or in combination with, signs required by this regulation.

(2) The employer shall ensure that no statement appears on or near any sign required by this regulation which contradicts or detracts from the meaning of the required sign.

B. Signs

(1) The employer shall post the following warning sign in each work area where the PEL is exceeded:

WARNING

HAZARD

LEAD WORK AREA

NO SMOKING, EATING OR DRINKING

(2) The employer shall ensure that signs required by this regulation are illuminated and cleaned as necessary so that the legend is readily visible.

.15 Recordkeeping

A. Initial Determination and Exposure Monitoring

(1) The employer shall establish and maintain an accurate record of:

(a) Initial determinations; and

(b) All monitoring required in Regulation .04.

(2) This record shall include:

(a) The information required in Regulation .04;

(b) For each sample taken:

(i) The date, or dates,

(ii) The number of samples,

(iii) The duration of sampling,

(iv) The location,

(v) The results on each sample taken, and

(vi) Where applicable, a description of the sampling procedure used to determine representative employee exposure;

(c) A description of the sampling and analytical methods used and evidence of their accuracy;

(d) The type of respiratory protective devices worn, if any;

(e) Name, social security number, and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent; and

(f) The environmental variables that could affect the measurement of employee exposure.

(3) The employer shall maintain the initial determination and exposure monitoring records for the longer of:

(a) 40 years; or

(b) The duration of employment plus 20 years.

B. Medical Surveillance

(1) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by Regulations .10 and .11.

(2) This record shall include:

(a) The name, social security number, and a description of the duties of the employee;

(b) One copy of each physician's written opinion;

(c) Results of any airborne exposure monitoring conducted for that employee and the representative exposure levels supplied to the physician; and

(d) Any employee medical complaints related to exposure to lead.

(3) The employer shall keep, or ensure that the examining physician keeps, the following medical records;

(a) A copy of the medical examination results, including medical and work history, required under Regulations .10 and .11.

(b) A description of the laboratory procedures together with a copy of any standards or guidelines used to interpret the test results or references to that information; and

(c) A copy of the results of biological monitoring.

(4) The employer shall maintain or ensure that the physician maintains the medical records for at least 40 years, or for the duration of employment plus 20 years, whichever is longer.

C. Medical Removals

(1) The employer shall establish and maintain an accurate record for each employee removed from current exposure to lead pursuant to Regulation .12.

(2) Each record shall include:

(a) The name and social security number of the employee;

(b) The date of each occasion on which the employee was removed from exposure to lead, together with the corresponding date on which the employee was returned to his or her former job status;

(c) A brief explanation of how each removal was, or is being, accomplished; and

(d) A statement with respect to each removal indicating whether the reason for the removal was an elevated blood lead level.

(e) The employer shall maintain each medical removal record for at least the duration of an employee's employment.

D. Availability

(1) Upon request, the employer shall make all records required by this chapter available to the Department for examination and copying.

(2) Upon request, the employer shall make environmental monitoring, biological monitoring, and medical removal records required by this chapter available to affected employees or their authorized employee representative for inspection and copying.

(3) Upon request, the employer shall make an employee's medical records required to be maintained by this regulation available to the affected employee or former employee, or to a physician or other individual designated by the affected or former employee for examination and copying.

E. Transfer of Records

(1) When the employer ceases to do business:

(a) The successor employer shall receive and retain all records required by this chapter.

(b) If there is no successor employer to receive the records required by this chapter and to retain them for the prescribed retention period, the employer shall transmit these records to the Department.

(2) At the expiration of the record retention period prescribed by this chapter, the employer shall:

(a) Notify the Department at least 3 months before the disposal of the records; and

(b) Transmit the records to the Department if requested within the period.

.16 Observation of Monitoring

A. Employee Observation

The employer shall provide affected employees or their designated representative an opportunity to observe monitoring of employee exposure to lead conducted pursuant to Regulation .04.

B. Observation Procedures

(1) When observation of the monitoring of employee exposure to lead requires entry into an area where the use of respirators, protective clothing, or equipment is required, the employer shall:

(a) Provide the observer with and ensure the use of the respirators, clothing, and equipment; and

(b) Require the observer to comply with all other applicable safety and health procedures.

(2) Without interfering with the monitoring, observers shall be entitled to:
(a) Receive an explanation of the measurement procedures;

(b) Observe all steps related to the monitoring of lead performed at the place of exposure; and

(c) Record the results obtained or receive copies of the results when returned by the laboratory.

11/17/10

605578 - REPLACING STEEL RIVETS / BOLTS

Description:

The item shall consist of furnishing all materials and replacing the rusted/deteriorated rivets of the structural members with bolts in accordance with the notes and details on the Plans and/or as directed by the Engineer.

Materials and Construction Methods:

In addition to the rivets designated in the Contract Documents to be removed and replaced with high strength bolts; following the visual condition inspection of the girders, all rivets determined to have 50% or greater loss of head by the Engineer shall be removed and replaced with high strength bolts. Where adjacent rivets are being replaced, one rivet at a time shall be removed and immediately replaced with a bolt before the next rivet is removed.

All rivets to be removed shall be mechanically extracted in a manner as to protect the base metal of the steel girders.

Reaming and drilling shall be in accordance with the requirements of Section 605 of the Standard Specification.

Bolts shall be high strength friction type bolts, nuts, and washers conforming to the requirements of ASTM A325 and Section 605 of the Standard Specification.

Workmanship and Handling of Materials:

The Contractor shall perform all work in a manner that prevents damage to or loss of materials. Where the Contractor causes damage to or loss of materials, the Contractor shall repair or replace these materials to the acceptance of AMTRAK and the Engineer at no additional cost to AMTRAK or the Engineer.

Basis of Payment:

The payment for the item shall be made for at the contract unit price bid per Each for 605578, "Replacing Steel Rivets / Bolts", which price and payment shall constitute full compensation for furnishing all materials, removing the rusted/deteriorated rivets as directed, reaming and drilling, and replacing with high strength steel bolts, nuts and washers, disposing of discarded materials, for all labor, equipment, tools, and incidentals necessary to complete the work.

11/17/10

605626 - DISMANTLE AND ERECT BRIDGE SUPERSTRUCTURE

Description:

This item consists of: dismantling the existing steel superstructure, shipping it to the repair work site as established by the Contractor, shipping the superstructure back to the job site, and erecting the repaired superstructure, as indicated in the Contract Documents and as approved by the Engineer.

Construction Methods:

The Contractor is responsible for designing and detailing the dismantling, shipping, and erection schemes. These shall be designed by a Professional Engineer licensed in the State of Delaware and approved for usage by the Engineer. Design calculations and working drawings shall be submitted to the Engineer for review and approval prior to starting dismantling work. Work shall not begin without approval from the Engineer.

Extreme care must be exercised so as not to damage any portions of the existing structure that are to remain in the finished structure. Any damage, caused by the Contractor's operations, to any portion of the existing structure that is to remain shall be repaired by the Contractor to the complete satisfaction of AMTRAK and the Engineer at the sole expense of the Contractor.

Each of the bridge girders shall be dismantled, shipped and erected in a single piece.

No burning, cutting, or bending of structural steel members to remain will be permitted.

Marking, handling, shipping, storing, and erection of the steel superstructure shall conform to Section 605 of the Standard Specifications.

Method of Measurement:

For Bid Item 605626, the dismantling and erecting of existing bridge superstructure will not be measured.

Basis of Payment:

The Bid Item 605626 “Dismantle and Erect Bridge Superstructure” will be paid for at the Contract lump sum bid price and shall include all work which shall constitute full compensation for designing and implementing dismantling, shipping, and erecting of the superstructure including repairing and damage done to the bridge caused during dismantling, erecting, or shipping, and for all labor, equipment, tools, and all incidentals to complete the work.

11/17/10

605651 – REPLACING BRIDGE BEARINGS, SPECIAL

Description:

This work consists of removing the existing bearings, furnishing and placing new bearings as indicated on the Plans, in accordance with these Specifications and as directed by the Engineer.

Materials:

Elastomeric Bearings: Bearings shall be fabricated and installed in accordance with the requirements of Sections 605 and 826.06 of the Standard Specifications, as indicated in the Plans and as noted in these Specifications. Structural steel for the bearings shall conform to AASHTO M270, Grade 50. Steel plates shall meet a flatness requirement of 0.5 percent in the direction being measured (width, length, and diagonals) maximum, but not to exceed 1/8 inch.

Sole plates shall be beveled to match the grade if the grade exceeds 1%. The Contractor will be responsible for measuring the grade of the bridge in the field to determine the appropriate bevel at each bearing location.

The bridge bearings shall be shop assembled and match marked to ensure a proper fit. The bearings shall receive one shopcoat of paint in accordance with the requirements of 605.35 through 605.39 of the Standard Specifications and Item No. 605522 herein

Masonry Products: Grout used for filling annular space around 3" dia. anchor bolts shall be non-shrink, flowable, cementitious type material meeting the requirements of ASTM C1107 having a 5,000 psi compressive strength at 28 days and a maximum aggregate size of 4 mm, or approved equal. Epoxy grout used for anchor bolts for bearing devices and non-shrink mortar used for repairing concrete bearing pads shall be as manufactured by Master Builders, Inc., 23700 Chagrin Boulevard, Cleveland, Ohio 44122 or as manufactured by Sika Corporation, 201 Polito Avenue, Lundhurst, New Jersey 07071, or approved equal.

Construction Methods:

Removal of existing bearing plates from existing girders shall not damage portions of the girder to remain.

Method of Measurement:

The quantity of "Replacing Bridge Bearings, Special" will be measured as the number of bridge bearings replaced and accepted.

Basis of Payment:

The quantity of "Replacing Bridge Bearings, Special" will be paid for at the Contract unit price for each "Replacing Bridge Bearings, Special". Price and payment will constitute full compensation for removing and disposing of the existing bearings, furnishing, painting and installing the new bearings, anchor bolts, nuts, and washers, welding, and for all materials, labor, equipments, tools and incidentals necessary to complete this item of work. The payment for this item does not does not include the cleaning of lead-based paint and it will be paid for under Item No. 605533.

605655 - BEARING ANCHOR BOLT REPLACEMENT

Description:

This work consists of furnishing and installing bearing anchor bolts, washers and nuts where indicated on the drawings and as directed by the Engineer.

Materials:

Anchor bolts shall be ASTM F 1554, Grade 55.

Washers shall be ASTM F 436.

Nuts shall be ASTM A 194, Grade 24.

Grout used to embed anchor bolts shall be a non-shrink grout approved by the Department.

Method Measurement:

The quantity of anchor bolts will be measured as the actual number new anchor bolts installed and accepted.

Basis of Payment:

The quantity of anchor bolts will be paid for at the Contract unit price bid per each. Price and payment will constitutes full compensation for providing adequate access to the bearings, drilling and grouting holes for anchor bolts, furnishing and installing anchor bolts, washers and nuts, for all labor, equipment tools, and all necessary incidentals to complete the work.

605728 - SUPERSTRUCTURE

Description:

The work under this section shall consist of superstructure removal, structural steel shipping/delivery to and from fabrication shop, structural steel rehabilitation, structural steel and concrete disposal, cleaning and painting of structural steel, new structural steel cross-frames, lateral bracing and plates, new bearings and erecting structural steel as detailed in the Contract Documents.

The fabrication shop may be a temporary facility erected by the Contractor. Except where shown on the plans, no buildings, vehicles, or materials may be stored on Amtrak property within written approval from Amtrak.

The Contractor shall note that lead may be released during the dismantling, removal, or handling of the existing bridge.

A temporary protective shield shall be utilized to prevent materials from falling into Little Mill Creek.

Qualifications:

The Contractor shall be experienced in performing the Work of this Section with documented experience in similar types of deconstruction/construction work. Referenced work must have been completed within the past five (5) years.

Provide a Supervisor who shall be present at all times during the work and who shall be thoroughly familiar with the work required and who shall direct all work.

Existing Site Conditions:

1. The Contractor shall accept the site as it exists and will be responsible for all work as required.

2. The Contractor shall note the proximity of the overhead high voltage wires, catenary lines, and active tracks.

3. The Contractor shall coordinate with AMTRAK to visit the site at no additional cost to the Engineer or AMTRAK to ascertain existing site conditions and surrounding features related to the proposed work, and ensure that conditions are suitable for proper execution of the work.

4. Where non-visible (ie. Concealed by other materials) conditions upon exposure, are revealed to be other than those indicated in the Contract Documents, the Contractor shall immediately inform the Engineer and AMTRAK, in writing. The Contractor shall not continue this aspect of work until directed in writing by the Engineer.

Submittals:

Prior to the start of work, the Contractor shall provide the Engineer with the following, for approval, regarding superstructure work. This approval; however, will not release the Contractor from the obligation to observe extreme safety precautions used in normal high-risk work.

1. Destination and quantities of materials to be salvaged and rehabilitated for reuse, recycled or sent for disposal.
2. Method and sequencing of superstructure removal and construction, including a list of equipment to be used.
3. Schedule for superstructure removal and construction.
4. Details on materials handling and removal procedures. Materials to be salvaged for reuse shall be stored and handled in the same manner as for similar new materials.
5. Details and documentation on the removal, containment and disposal of the existing paint system as specified in 605533 "Cleaning Existing Steel Structures - Hazardous Base".

Construction Procedures:

1. General:
   Construction work and operations by the Contractor on AMTRAK property shall be:

   1. Subject to the inspection and approval of the Engineer and AMTRAK.
   2. In accordance with AMTRAK's written outline of specific conditions.
   3. In accordance with AMTRAK's general rules, regulations and requirements including those relating to safety, fall protection and personal protective equipment.

2. Demolition, Erection and Hoisting:

   Railroad tracks and other railroad property must be protected from damage during all construction procedures.

   The Contractor is required to submit a plan showing the location of cranes, horizontally and vertically, operating radii, with delivery or disposal locations shown. The location of all tracks and other railroad facilities as well as all obstructions such as wire lines, poles, adjacent structures, etc. must also be shown.

   Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick. A complete set of crane charts, including crane, counterweight, and boom nomenclature is to be submitted.

   Plans and computations showing the weight of the pick must be submitted. Calculations shall be made from plans of the existing and/or proposed structure showing complete and sufficient details with supporting data for the demolition or erection of the structure. If required, lifting weights must be calculated from field measurements. The field measurements are to be made under the supervision of the Registered Professional Engineer submitting the procedure and calculations.

   A data sheet must be submitted listing the types, size and arrangements of all rigging and connection equipment.

   A complete procedure is to be submitted, including the order of lifts, time required for each lift, and any repositioning or re-hitching of the crane or cranes.

   All erection and demolition plans, procedure, data sheets, etc. submitted must be prepared, signed and sealed by a Registered Professional Engineer in the State of Delaware.

   AMTRAK's representative must be present at the site during the entire demolition and erection procedure period.

All procedures, plans and calculations shall first be approved by the Engineer and AMTRAK, but such approval does not relieve the Contractor from liability.

Maintenance of Channel Flow:

Maintenance of Channel Flow for superstructure removal and construction work shall be designed by the Contractor and approved by the Engineer prior to the start of any work.

Protection:

The Contractor shall assume full responsibility for the design and adequacy of any temporary shoring and/or bracing required during the superstructure removal or construction. Including all necessary signs, barricades, shields and screens as required for the safety of the structure, adjacent structures, equipment, machinery and workers. All designs by the Contractor shall be designed by a Professional Engineer registered in the State of Delaware. Working drawings, including calculations, for the protective shields, support of excavation shall be submitted to the Engineer for review and approval.

Protective Shields:

The Contractor shall furnish, install and remove all materials required for a temporary protective shield as described herein, and/or as directed by the Engineer.

While all superstructure concrete and structural steel is being removed from the existing bridge, the Contractor shall furnish and erect temporary protective shields under the work area and five feet minimum beyond the outside faces of the bridge superstructure.

The Protective Shields shall meet the following:

1. The shields shall be supplemented with such additional suitable enclosures of tarpaulins or wire mesh as may be necessary in order to insure against the dropping of materials, tools, equipment, and other objects below the level of the shields.
2. Broken concrete and other debris shall not be allowed to accumulate on the shields, but shall be removed promptly. The shields shall not be used for storing or stockpiling construction materials.
3. Timber shall have an allowable flexure stress of 1,600 psi and the shield must be designed for 150 lb/sq. ft. live load, in addition to their own dead load, and 60 mph wind load.
4. All plywood shall be new and shall be not less than ¾-inch thick.
5. Bolts, nuts, washers, structural steel, etc. shall conform to Section 601 of the Standard Specifications.
6. The shields shall be assembled by means of bolts and nails, all as approved by the Engineer.
7. The flooring and siding of the shield shall have no cracks or openings through which material particles may fall.
8. The Contractor shall submit shop drawings for the shields, including erection plans, to the Engineer for approval, prior to the start of the work.
9. All connections of the protective structures to the steel work of existing bridge shall be made by means of clamps or other approved devices. The drilling of holes in the existing steel work, or welding thereto, will not be permitted.
10. The Contractor is required to submit the design and details of the temporary protective shield sealed by a Professional Engineer registered in the State of Delaware prior to commencing work.
11. After protective shield has served its purpose, and approval has been given by the Engineer, the Contractor shall remove and dispose of the temporary protective shield away from the site to the satisfaction of the Engineer.

Workmanship and Handling of Materials:

The Contractor shall perform all work in a manner that prevents damage to or loss of materials. Where the Contractor causes damage to or loss of materials, the Contractor shall repair or replace these materials to the acceptance of and at no additional cost to the Engineer or AMTRAK.

Care shall be taken, at all times throughout the duration of the project, to preserve the structural integrity and condition of all steel not scheduled for disposal. All materials scheduled for salvage for reuse shall be handled and stored as specified for new materials.

Extreme care shall be taken during all work due to the close proximity of overhead high voltage wires, catenary lines, active rail and rail traffic.

Demolition:

Demolition shall include, but is not limited to, the removal of the existing bridge walkway brackets, railing, reinforced concrete bridge deck, steel cross frames, steel lateral bracing and bridge bearings. The bridge superstructure shall be demolished and salvaged such that the two existing steel girders are separated from one another in a manner suitable for the girders to be safely removed and transported off site to an approved fabrication facility for rehabilitation. All work shall be as specified in 605626 "Dismantle and Erect Existing Bridge Superstructure".

Removal:

Removal shall mean removing bridge superstructure from the project site, salvaging the materials as specified by the Contract Documents, stockpiling the materials for reuse at the Contractor's storage area, disposing and/or recycling of the remainder of the bridge superstructure materials for disposal and leaving all work areas in a safe working condition. Existing paint system is to be removed in the shop and is the Contractors responsibility for proper removal, containment and disposal as specified in 605533 "Cleaning Existing Steel Structures - Hazardous Base". Materials not listed for reuse shall be disposed of or recycled in a manner and location acceptable to the Engineer. The Contractor shall provide written acceptance of all materials from the owners of the disposal/recycling site(s) to the Engineer. There shall be no additional cost to the Engineer or AMTRAK for the removal and/or salvage of the bridge superstructure.

Rehabilitation:

Rehabilitation of the existing steel girders shall include, but is not limited to:

1. Removal and disposal of the existing steel cross-frames, lateral bracing members and bridge bearings.
2. Removal of all rivets connecting the existing steel cross-frame and lateral bracing connection plates to the girders, as specified in 605578 "Replacing Steel Rivets with Bolts".
3. Removal of all rivets connecting the existing steel bearing assemblies to the girders, as specified in 605578 "Replacing Steel Rivets with Bolts".
4. All rivets to be removed shall be mechanically extracted in a manner as to protect the base metal of the steel girders.
5. The Contractor shall utilize portions of the existing steel cross frames and connection plates to fabricate test samples for material testing of the existing structural steel. The Contractor shall fabricate a minimum of two (2) test samples for steel weldability tests. The Weldability tests shall be used to verify the weldability of the proposed shear connectors/studs to the existing girders top flange. The Contractor shall fabricate a minimum of three (3) samples for Tension tests to determine the material properties of the existing steel. The samples and testing shall be in accordance with ASTM A 370 "Standard

Test Methods and Definitions for Mechanical Testing of Steel Products". The Contractor shall have the materials tested at a testing facility approved, prior to the testing, by the Delaware Department of Transportation. All testing results shall be provided in writing to the Engineer and AMTRAK prior to any cleaning of the structural steel or rehabilitation work.

6. If a rivet hole has been scored or otherwise damaged during rivet removal, the hole shall be reamed and the replacement high strength bolt shall be one size larger in nominal diameter than the replaced rivet. All holes and high strength bolts, nuts and washers shall be in accordance with Section 605 of the Standard Specification.
7. Shop cleaning all structural steel that is not scheduled for disposal in accordance with Section 605 "STEEL STRUCTURES" of the Standard Specifications and 605533 "Cleaning Existing Steel Structures - Hazardous Base".
8. The Contractor shall schedule a structural condition inspection of the cleaned girders, at the fabrication facility. Inspection to be performed by the Engineer and AMTRAK, or the authorized representative of each. The inspection is to quantify any deterioration and/or defects in the structural steel and/or rivets. Following the inspection, the Engineer will provide repair details and direction to the Contractor, as required.
9. Performing any required structural repairs to the girders as a result of the structural condition inspection. Repairs shall be performed in accordance with the requirements as specified in section 605 "Steel Structures" and 605578 "Replacing Steel Rivets with Bolts".
10. Painting of the structural steel. Painting to be performed in accordance with 605522"URETHANE PAINT SYSTEM, EXISTING STEEL". The Contractor shall coordinate the paint system and topcoat Federal Color Number with AMTRAK, and submit the paint system and Federal Color Number to the Engineer for written approval as specified in Section 605 "STEEL STRUCTURES" of the Standard Specifications.

Method of Measurement:

The Superstructure will not be measured, but will be paid for as a Lump Sum item.

Basis of Payment:

Section 605728, Superstructure, shall be paid for at the contract Lump Sum price bid for Superstructure, which price and payment shall constitute full compensation for all labor, materials and equipment as well as bridge deck demolition, removal, protective shields, and all incidentals necessary to complete the item.

11/17/10

614817 - BORE 20" STEEL PIPE CASING

Description:

This work consists of furnishing and installing steel casing pipes by boring to act as a permanent form for retaining wall H piles adjacent to catenary foundations. All the work shall be in accordance with this special provision and in reasonably close conformity with the limits, dimensions, lines and grades shown on the Plans or established by the Engineer.

The pipe joints shall have 30 percent beveled ends suitable for welding in the field. Joints shall be welded in accordance with the requirements of AWWA C-206.

Materials:

Steel Pipe

Pipe shall meet the requirements of ASTM Specification A 139 for Grade B steel and shall have a minimum wall thickness of 3/8″ (9.5 mm). Used pipe or out of round pipe is not acceptable. Casing pipe shall be bituminous coated on the outside. After welding or cutting the pipe, the welded and/or cut end shall be recoated with bituminous material to the satisfaction of the Engineer. The Contractor shall provide the Engineer with a letter of compliance or corporate certificate verifying that the steel pipe provided complies with these specifications.

Construction Methods:

Place steel casing in predrilled holes. Remove excess soil within the casing and fill with concrete grout per Bid Item 602625 “Post and Plank Retaining Wall”.

Method of Measurement:

The quantity of steel pipe casing installed will be measured as the actual number of linear feet of each size of pipe placed and accepted measured vertically along the centerline of pipe.

Basis of Payment:

The quantity of steel pipe casing installed will be paid for at the Contract unit price per linear foot for each size of pipe. Price and payment will constitute full compensation for predrilling; pumping or other disposal or control of water; the furnishing and placing of sheeting and bracing, as needed, the furnishing and placing of steel pipe, including testing, the filling of voids, and the furnishing of all labor, tools, materials, apparatus, equipment and related work necessary to complete the work as shown, specified and directed.

Refer to Bid Item 602625 “Post and Plank Retaining Wall” for payment of related elements.

11/17/10

617515 - HEADWALL

Description:

This work consists of furnishing and placing a concrete drainage headwall (H-1) at Sta. 332+22, Lt. as shown on the Plans.

Materials:

Materials shall conform to the requirements of Section 612, 812 and 824 of the Standard Specifications.

Construction Methods:

Concrete headwalls shall be placed in conformance with the details, dimensions, and notes as shown in the details found in the Plans and at the location shown on the Plans.

Method of Measurement and Basis of Payment:

The quantity of headwalls will be measured and paid for at the Contract unit price per each. Price and payment will constitute full compensation for demolition of existing structure, furnishing, hauling, and installing materials, including concrete and bar reinforcement; for excavating, backfilling, and compacting, stream diversion, temporary support of excavation, and maintenance of in-place communication conduit; for cribbing, shoring, and sheeting; and for all labor, equipment, tools, and incidentals required to complete the work.

Drilled Micropiles and Micropile Load Testing will be measured and paid for according to Bid Items 619520 and 619521.

11/17/10

619520 – DRILLED MICROPILES
619521 - MICROPILE LOAD TESTING

Description:

A. This section specifies the designing of micropile system, furnishing of all labor, equipment and material to furnish and install drilled micropiles, with a design capacity as listed on drawings or as required by support of excavation. This work includes, but is not limited to:

1. Designing the micropile system.
2. Furnishing and delivery of all materials.
3. Pile installation including drilling, grouting and reinforcing.
4. Perform six pre-construction verification load tests.

B. All drilled micropiles shall be constructed using a full pile length casing to remain in place until the pile is grouted. Compression piles may be designed as a fully cased micropile.

Submittals

A. Submit personnel list and qualifications as described in Contractor's Qualification at time of bid.

B. Submit working drawings including details, dimensions, quantities, detailed site plan, load test plans, calculations with design assumptions and written design summary at least 30 calendar days prior to mobilization to the site. Clearly state soil and rock parameters, adhesion values, Factor of Safety and micropile dimensions assumed. Design in accordance with FHWA publication FHWA-SA-97-070 "*Micropile Design and Construction Guidelines* Working drawings shall clearly show all information required for the construction and quality control of the micropiling including unique number for each micropile. Submit at least 5 sets of working drawings on 11 x 17-inch paper. Calculations can be on 8-1/2 x 11 inch size paper.

C. Submit cement grout or concrete design mix, results of cube or cylinder tests performed on design mix, and proposed method and frequency of obtaining samples for testing during pile installation. Submit for review any admixtures to be used in the grout or concrete.

D. Pile Installation Methodology. Submit descriptions of:

1. Pile design details, including reinforcing steel design and splice details.

2. Method to install piles, including drilling the holes, advancing the casing, flushing drilled holes, installing reinforcement, and controlling and disposing of water and spoils.

3. Method and equipment for grouting piles.

4. Methods and procedures for drilling through and/or removing obstructions.

5. Certified mill test reports for the reinforcing steel or coupon test results for permanent casing without mill certifications.

E. Pile Load Test Information: Submit descriptions of:

1. Proposed details of test set-up, including equipment planned.

2. Design calculations for test pile and reaction system.

3. Calibration reports for pile load test jacking/recording system.

4. Load test report for each test completed.

F. Submit weekly field records of pile installation as described in Records.

G. Design Calculations stating clearly all assumptions, references, equations and other evaluations to determine the design and tip elevation of the micropiles. Refer to and use FHWA Publication FHWA-SA-97-070 for SLD design methods. All calculations are to be sealed by an engineer licensed in the State of Delaware and experienced in the design of micropiles as described in Contractor's Qualification.

H. Design calculations stating clearly all assumptions, references, equations and other evaluations to design the micropile to footing connection detail. All calculations are to be sealed by an engineer licensed in the State of Delaware and experienced in the design of micropiles as described in Contractor's Qualification.

I. Details of pile installation and pile connection to footing.

J. As built plans shall be submitted 30 days of completion of the work.

Project Conditions

A. Prior to bidding the work, visit site to observe conditions that may affect performance of the work. No claim for additional costs will be allowed because of lack of knowledge of surface conditions discernible from observation at the site.

B. References in these specifications to "Code" shall mean the AREMA "Manual for Railway Engineering."

C. Without limiting the other requirements of these specifications, all work shall conform to the requirements of the Code and the requirements of the referenced documents to the extent that the provisions of such documents are not in conflict with the requirements of said Code.

D. REFERENCE STANDARDS:

1. ASTM: Specifications of the American Society for Testing and Materials.

2. ACI: American Concrete Institute.

3. AISC: American Institute of Steel Construction.

4. API: American Petroleum Institute

5. FHWA: Federal Highway Administration publication

Records

A. The Contractor shall provide to the Engineer, within two weeks after installation of all piles, a plan, showing the as-installed location of all piles.

B. The Contractor shall maintain complete records of pile installations, independent of records made by the Engineer. A complete set of records including a separate log for each micropile shall be submitted to the Engineer within one (1) working day after completion of the work. The records for each pile installation shall include:

1. Pile designation number and date of installation.

2. Top of pile elevation immediately after installation.

3. Tip elevation as installed.

4. Deviation from specified plan location in inches to the nearest ½ inch.

5. Pile length immediately after installation to the nearest 0.1 foot.

6. Bottom elevation of drill casing upon completion of drilling and bottom elevation of steel core reinforcing.

7. Description of any deviations from the design location and batter or from the approved pile design and installation procedures, and description of any unusual occurrences during drilling, installation and grouting.

8. Grout volumes.

9. Inclinations of the drilled battered pile installed.

MATERIALS

Cement Grout

A. The cement grout shall consist of a mixture of Portland cement and water so proportioned and mixed as to provide a fluid grout capable of maintaining the solids in suspension without appreciable bleed. The materials shall be so proportioned as to provide a hardened grout having a minimum ultimate compressive strength of 4,000 psi at 28 days in accordance with ASTM C109.

B. Cement shall conform to ASTM C150 Portland Cement Type I / II.

C. Mixing water for cement grout shall be clean and potable.

D. Admixtures shall conform to ASTM C 494.

E. Fine Aggregate: If sand – cement grout is used, sand shall conform to ASTM C 144.

Reinforcement

The reinforcing steel core shall consist of steel pipes, bars or a combination thereof, conforming to the following requirements:

1. Deformed steel bars: ASTM A615, Grade 60, 75 or 150.

2. Structural pipe or tubing: ASTM A 501 or API N-80.

3. When a bearing plate and nut are required to be threaded onto the top end of reinforcing bars for the pile top to footing anchorage, the threading may be continuous spiral deformed ribbing provided by the bar deformations (e.g., Dywidag or Williams continuous threadbars) or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, the next larger bar number designation from that shown on the Plans shall be provided, at no additional cost.

Permanent Steel Casing

A. Permanent steel casing shall consist of spiral welded or seamless steel casing of at least 0.5 inch thick, with equivalent capacity to transfer design loads at the casing joints. Joints between sections may be threaded or welded. As installed, there shall be no joints within three feet of the bottom of the pile cap. Steel casing shall meet the requirements of the ASTM A501, API N-80, or alternative material approved by the Engineer.

B. For permanent casing/pipe that will be welded, the following material conditions apply:

1. The carbon equivalency (CE) as defined in AWS D1.1, Section X15.1, shall not exceed 0.45, as demonstrated by mill certifications

2. The sulfur content shall not exceed 0.05%, ad demonstrated by mill certifications.

For permanent casing/pipe that will be shop or field welded, the following fabrication or construction conditions apply:

1. the steel pipe shall not be joined by welded lap splicing

2. welded seams and splices shall be complete penetration welds

3. partial penetration welds may be restored in conformance with AWS D1.1

4. the proposed welding procedure certified by a welding specialist shall be submitted for approval

Threaded casing joints shall develop at least the required nominal resistance used in the design of the micropile.

Others

A. Centralizers and Spacers

Centralizers and spacers shall be fabricated from schedule 40 PVC pipe or tube, steel, or material non-detrimental to the reinforcing steel. Wood shall not be used. Centralizers and spacers shall be securely attached to the reinforcement; sized to position the reinforcement within 1/2-inch of plan location from center of pile; sized to allow grout tremie pipe insertion to the bottom of the drillhole; and sized to allow grout to freely flow up the drillhole and casing and between adjacent reinforcing bars.

B. Encapsulation

Encapsulation (double corrosion protection) shall be shop fabricated using high-density, corrugated polyethylene tubing conforming to the requirements of ASTM D3350 with a nominal wall thickness of 0.8 mm. The inside annulus between the reinforcing bars and the

encapsulating tube shall be a minimum of 5mm and be fully grouted with non-shrink grout conforming to this specification.

C. Epoxy Coating

The minimum thickness of coating applied electrostatically to the reinforcing steel shall be 0.3 mm. Epoxy coating shall be in accordance with ASTM A775 or ASTM A934. Bend test requirements are waived. Bearing plates and nuts encased in the pile concrete footing need not be epoxy coated.

Reinforcing Bar Corrosion Protection

A. Sheathing

Smooth plastic sheathing, including joints, shall be watertight. Polyvinyl chloride (PVC) sheathing shall conform to ASTM D 1784, Class 13464-B.

B. Water

Water used in the grout mix shall conform to AASHTO T 26 and shall be potable, clean, and free from substances that may be injurious to cement and steel.

Contractor's Qualifications

Contractor shall possess the following qualifications:

1. Must have completed and shall document having successfully completed in the last three years, as a Company, at least five projects totaling at least 100 micropiles of similar or equivalent difficulty. Appropriate written description of the projects completed and references for owners shall be submitted.

2. Must have in its active employment and shall assign to this project, specialized field and supervisory personnel skilled in performing work of higher or similar characteristics as that requested for this project. The supervisory personnel for this project must have as least five years of supervisory experience in this type of work. Relevant written personnel background biographies shall be submitted.

3. Must have available and be thoroughly familiar with the specialized type of equipment needed to perform work of this type. A list of the equipment and resources it plans to mobilize for the performance of the project shall be submitted prior to beginning any construction operations.

4. The micropiles shall be designed by an engineer licensed in the State of Delaware and with experience in the design and construction of at least five successfully completed micropile projects within the last three years.

Field Quality Control

A. The Contractor shall engage an independent testing agency, subject to the approval of the Engineer, to test the grout mix used for the drilled micropiles. Cement grout cube specimens or grout cylinders, shall be obtained and tested, with a minimum of one set of three, 2-inch grout test cubes or 3-inch diameter cylinders taken from each 2,000 gallons of grout mixed. The testing agency shall submit a certified copy of the test results to the Engineer within two working days of completion of the test.

B. Provide the Engineer free and safe access to the work areas at all times. The Contractor shall furnish the Engineer or his authorized representative with unrestricted access as reasonable to observe and document the work.

C. Notify the Engineer immediately of any damage or deviation that may affect the acceptability of the pile, so that corrective measures, if required, may be carried out with minimum delay.

D. Piles that are damaged or defective due to defective materials, improper installation procedure, or improper welding of steel reinforcing, or piles that have an installed volume of cement grout placed not exceeding a volume equal to 125% of the theoretical volume of the portion of the drill hole in soil and bedrock, will not be accepted.

Pile Design

A. Design the pile capacity as listed on drawings or as required by Support of Excavation. The allowable stress on the steel core shall be equal to 40 percent of the minimum specified stress, but not greater than 24 ksi. The allowable stress on the cement grout shall be equal to 33 percent of the minimum 28-days compressive strength, but not greater than 1.6 ksi.

B. Minimum Reinforcing: Design the pile to carry not less than 40 percent of the design compressive load on the reinforcing steel.

C. The pile design shall provide for a minimum grout cover over the core steel of 1-inch.

D. Details of the proposed pile section and a description of the proposed installation method shall be prepared by an engineer licensed in the State of Delaware and shall be submitted to the Engineer for approval before starting the work.

E. Steel casing shall have 2/16-inch deducted from the shell thickness to allow for corrosion.

CONSTRUCTION METHOD

Installation

A. Drill a cased hole to the proposed depth of the bottom of the pile. Water shall not be used for the drilling operation. Handle and dispose of cuttings in a manner that is approved by the Engineer. The use of bentonite drilling mud will not be permitted.

B. Immediately prior to grouting, flush the hole with clean water to remove all contaminated water and cuttings. The hole shall be flushed through the tremie grout pipe fully extended to the bottom of the hole and the casing fully in place to pile cutoff level. The water shall be pumped at a high velocity until the wash water at the top of the casing is relatively clear. The hole shall be grouted within 1 hour thereafter. In case of delay, the hole shall be re-flushed and re-checked prior to grouting as directed by the Engineer. The core steel shall be lowered into the pile before or after grouting. A positive displacement grout pump shall be used. The grout pump shall be calibrated on site by pumping into an approved container of at least 50 gallons no more than one week prior to installing the piles.

C. The micropile casing shall be extracted to develop a bonded zone only after grout has been placed in the micropile.

D. For a fully cased micropile, immediately after grouting, raise the casing 5-ft above the pile tip. The casing shall then be plunged into the grout to the bottom of the drilled hole to form a bonded zone around the casing.

E. Use centralizers at spacing no greater than 10-ft to install and center the core steel in the drill hole. Provide adequate development length for each bar into the pile cap.

F. Grouting shall continue after installation of reinforcement as necessary until the grout return at the top of the casing is to the same consistency as the grout being pumped into the hole.

Micropile Allowable Construction Tolerances

A. Centerline of piling shall not be more than 3-inches from indicated plan location.

B. Pile shall be plumb within 2 percent of total-length plan alignment.

C. Top elevation of pile shall be plus 1-inch or minus 2-inches maximum from vertical elevation indicated.

D. Centerline of reinforcing steel shall not be more than 5/8-inch from indicated location.

Drilled Micropile Verification Load Test

A. For each bridge abutment perform one verification pile load test in compression. For the retaining wall perform 3 verification pile load tests. Two micropiles shall be tested in compression and one in tension. Perform one verification pile load test in compression for the support of excavation (SOE) micropiles and the culvert at STA332+22. Perform the compression test in accordance with ASTM D-1143 and the tension test in accordance with ASTM D-3689. Load tests shall be conducted, the results evaluated, and the method of installation approved by the Engineer, prior to installing the production piles. The test piles will not be reused as production piles.

B. Submit to the Engineer the details of the proposed load test set-up and all equipment and measurement systems to be used for the test, and obtain approval from the Engineer before any load test is made. All load tests shall be observed by the Engineer or authorized representative.

C. Apply the load to the pile core by means of a single hydraulic jack. Construct the apparatus for applying the loads to the test pile so that the loads are applied axially to the pile. Calibrate the test load jacking system including the hydraulic jack, and pressure gauge prior to the test so that the load applied is controlled to within 5 percent of the total applied load. Submit calibration reports to the Engineer prior to the start of the pile load test. Calibration tests shall be performed within 90 days of the date of the load test.

D. Provide all necessary materials and labor for construction of a settlement measuring system for each test, as follows:

1. Provide an independent reference beam for load test measurement apparatus support. The reference beam must be independently supported with supports firmly embedded in the ground at a distance at least 8 feet from the test pile and reaction piles. One end of the reference beam must be free to move as the length of the beam changes with temperature variations.

2. Mount three dial gauges equidistant from the center of the test pile and at 120-degree intervals around the pile. Attach the dial gauges rigidly to the reference beam. Align

gauge stems vertically and provide smooth horizontal bearing surfaces for the gauge stems. Dial gauges shall have at least 2-inch travel and shall read to 0.001 inch.

3. Establish a reference point on the test pile and at each end or the center of the reference beam. The reference points shall consist of graduated scales machine-divided into 0.02-inch and attached securely to the pile and reference beam. The reference points shall be monitored using survey equipment during the pile load test.

4. Protect the settlement measuring system against rain, wind, frost, and any other disturbances that could affect the reliability of the settlement observations. Provide sunshading for the measuring system for the duration of the test and for a minimum of 1-hour prior to the start of the test.

E. Submit a detailed report including such information as pile location, type, diameter, length, settlement readings, and all other pertinent data as indicated in ASTM D-1143 and ASTM D-3689.

F. Verification Test Loading Schedule.

Test verification piles designated for compression or tension load testing to a maximum test load of 2.5 times the micropile Design Load shown on the Working Drawings. The verification pile load tests shall be made by incrementally loading the micropile in accordance with the following cyclic load schedule for both compression and tension loading:

AL = Alignment Load DL = Design Load		
	LOAD	HOLD TIME
1	AL (0.05 DL)	1 minute
2	0.25 DL	1 minute
3	0.50 DL	1 minute
4	AL	1 minute
5	0.25 DL	1 minute
6	0.50 DL	1 minute
7	0.75 DL	1 minute
8	AL	1 minute
9	0.25 DL	1 minute
10	0.50 DL	1 minute
11	0.75 DL	1 minute
12	1.00 DL	1 minute
13	AL	1 minute
14	0.25 DL	1 minute
15	0.50 DL	1 minute
16	0.75 DL	1 minute
17	1.00 DL	1 minute
18	1.33 DL	**60 minutes (Creep Test Load Hold)**
19	1.75 DL	1 minute
20	2.00 DL	1 minute
21	2.25 DL	1 minute
22	**2.50 DL (Maximum Test Load)**	10 minutes

AL = Alignment Load DL = Design Load		
	LOAD	HOLD TIME
23	Al	1 minute

The test load shall be applied in increments of 25 percent of the DL load. Each load increment shall be held for a minimum of 1 minute. Pile top movement shall be measured at each load increment. The load-hold period shall start as soon as each test load increment is applied. The verification test pile shall be monitored for creep at the 1.33 Design Load (DL). Pile movement during the creep test shall be measured and recorded at 1, 2, 3, 4, 5, 6, 10, 20, 30, 50 and 60 minutes. The alignment load shall not exceed 5 percent of the DL load. Dial gauges shall be reset to zero after the initial AL is applied.

The acceptance criteria for micropile verification load tests are:

1. The test pile shall support the service design load values with a total pile top displacement of not greater than 0.25-inches. For compression testing, the total displacement shall be measured relative to the pile top position start of initial testing.

2. At the end of the 1.33 DL creep test load increment, test piles shall have a creep rate not exceeding 1 mm/log cycle time (1 to 10 minutes) or 2 mm/log cycle time (6 to 60 minutes or the last log cycle if held longer). The creep rate shall be linear or decreasing throughout the creep load hold period.

3. Failure does not occur at the 2.5 DL maximum test load. Failure is defined as load at which attempts to further increase the test load simply result in continued pile movement.

The Engineer will provide the Contractor written confirmation of the micropile design and construction within three (3) working days after the contractor submits the load test results. This written confirmation will either confirm the capacities and bond lengths specified in the Working Drawings for micropiles or reject the piles based upon the verification test results.

G. Verification Test Pile Rejection.

If a verification tested micropile fails to meet the acceptance criteria, the Contractor shall modify the design, the construction procedure, or both. These modifications may include modifying the installation methods, increasing the bond length, or changing the micropile type. Any modification that necessitates changes to the structure shall require the Engineer's prior review and acceptance. Any modifications of design or construction procedures or cost of additional verification test piles and load testing shall be at the Contractor's expense. At the completion of verification testing, test piles shall be removed down to the elevation specified by the Engineer.

H. Proof Load Tests.

Perform proof load tests on the first set of production piles installed at each designated substructure unit prior to the installation of the remaining production piles in that structure. The first set of production piles is the number required to provide the required reaction capacity for the proof tested piles. At least two proof tests shall be conducted in each structure location. Location of additional proof test piles shall be as designated by the Engineer.

I. Proof Test Loading Schedule.

Test piles designated for compression or tension proof load testing to a maximum test load of 1.67 times the micropile Design Load shown on the Plans or Working Drawings. Proof tests shall be made by incrementally loading the micropile in accordance with the following schedule, to be used for both compression and tension loading:

AL = Alignment Load DL = Design Load		
	LOAD	HOLD TIME
1	AL	1 minute
2	0.25 DL	1 minute
3	0.50 DL	1 minute
4	0.75 DL	1 minute
5	1.00 DL	1 minute
6	1.33 DL	**10 or 60 minute Creep Test**
7	**1.67 DL (Maximum Test Load)**	1 minute
8	AL	1 minute

Depending on performance, either a 10 minute or 60 minute creep test shall be performed at the 1.33 DL Test Load. Where the pile top movement between 1and 10 minutes exceeds 1 mm, the Maximum Test Load shall be maintained an additional 50 minutes. Movements shall be recorded at 1, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. The alignment load shall not exceed 5 percent of DL. Dial gauges shall be reset to zero after the initial AL is applied.

The acceptance criteria for micropile proof load tests are:

1. The test pile shall support the service design load values with a total pile top displacement of not greater than 0.25-inches. For compression testing, the total displacement shall be measured relative to the pile top position start of initial testing.

2. At the end of the 1.33 DL creep test load increment, test piles shall have a creep rate not exceeding 1 mm/log cycle time (1 to 10 minutes) or 2 mm/log cycle time (6 to 60 minutes). The creep rate shall be linear or decreasing throughout the creep load hold period.

3. Failure does not occur at the 1.67 DL maximum test load. Failure is defined as the load at which attempts to further increase the test load simply result in continued pile movement.

J. Proof Test Pile Rejection.

If a proof-tested micropile fails to meet the acceptance criteria, the Contractor shall immediately proof test another micropile within that footing. For failed piles and further construction of other piles, the Contractor shall modify the design, the construction procedure, or both. These modifications may include installing replacement micropiles, incorporating piles at not more than 50% of the maximum load attained, postgrouting, modifying installation methods, increasing the bond length, or changing the micropile type. Any modification that necessitates changes to the structure design shall require the Engineer's prior review and acceptance. Any modifications of design or construction

procedures, or cost of additional verification test piles and verification and/or proof load testing, or replacement production micropiles, shall be at the Contractor's expense.

Method of Measurement:

A. The drilled micropiles incorporated in the completed work for the abutment, retaining wall foundations and culvert foundation will be measured by the lineal foot complete in place. The length to be measured shall extend from the pile cutoff elevation to the bottom of the pile. Measurement will not be made for any portion of the pile above the cutoff elevation that is constructed and later cut off.

B. Drilled micropiles and all associated testing for the SOE will not be measured and will be paid under Section 207505 – Support of Excavation.

C. Penetrating or removing of obstructions will be incidental to the installation of the micropiles.

D. Drilled micropile load tests will be measured by the number of tests completed.

Basis of Payment:

A. The work of this Section will be paid at the Contract unit prices for the quantities as specified above. All costs in connection therewith, including designing of micropile system, reinforcing steel, permanent casing, micropile to footing connection and grout shall be included in the unit prices for the work to which it pertains.

1/18/11

708512 – DRAINAGE INLET, SPECIAL I

Description:

This work consists of furnishing and placing a reinforced concrete drainage inlet at the locations shown on the Plans.

Materials:

Materials shall conform to the requirements of Section 611, 612, 708, 812 and 824 of the Standard Specifications.

Construction Methods:

Special inlets shall be placed in conformance with the requirements of Sections 602 and 708 of the Standard Specifications, and with the details, dimensions, and notes as shown in the details found in the Plans and at the location shown on the Plans.

Method of Measurement and Basis of Payment:

The quantity of inlets will be measured and paid for at the Contract unit price per each, installed and accepted. Price and payment will constitute full compensation for furnishing, hauling, and installing all materials, including concrete and bar reinforcement, any necessary fittings, frames, and grates; for excavating, backfill, backfilling, compacting, and disposing of surplus materials; for cribbing, shoring, and sheeting; and for all labor, equipment, tools, and incidentals required to complete the work.

11/17/10

710504 – ADJUSTING MANHOLES

Description:

This work consists of adjusting / raising the cover of existing Amtrak communication manholes to finished grade at locations shown on the Plans and as directed by the Engineer.

Submittals:

Coordinate with Amtrak to obtain access to the interior of the existing manhole for field measurements.

Submit drawings prepare by an Engineer licensed in the State of Delaware for the proposed cast-in-place extensions, steps, and new top slab, if required. Top of cover shall extend a minimum of 1 inch above finished grade.

Materials:

Conform to the requirements of Sections 708 and 710 except that the Portland cement concrete shall be Class A (4500 psi). Conform to other additional requirements stipulated by Amtrak.

Construction Methods:

Construction shall be in accordance with the approved shop drawings and curing shall be done in accordance with the applicable requirements of Section 501 of the Standard Specifications.

Backfilling shall conform to Section 708.14.

Provide closure walls between proposed retaining walls and the manhole to confine backfill.

Method of Measurement:

The quantity of adjusting manholes will be measured as the actual number of manholes adjusted and accepted.

Basis of Payment:

The quantity of adjusting manholes will be paid for at the Contract unit price per Each. Price and payment will constitute full compensation for all design, coordination and for furnishing all materials required, excavation, backfill, closure walls, top slab, support of excavation, and incidentals necessary to complete the item.

11/17/10

734508 - TEMPORARY SEED MIX
734510 - REFERTILIZATION OF PERMANENT SEED MIX
734522 - SEED MIX # 1
734523 - SEED MIX # 2
734524 - SEED MIX # 3

All requirements of Section 734 shall apply except as modified below:

Add the following to Section 734.01 Description:

This will include, but not limited to furnishing and installing seed, the preparation of the seed bed, sowing of seed, topdressing, and maintenance of the planting until establishment, all in accordance with these Specifications and at locations indicated on the Plans or designated by the Engineer. Work described under this specification shall be performed by a contractor with a minimum of five years of experience in successfully establishing seed mix or plantings composed of species native to Mid Atlantic Coastal area of US.

734.03 Soil Supplements

Delete 734.03 part a. of Soil Supplements and replace with the following.

Limestone shall not be used as a soil supplement.

Delete the first paragraph in Subsection 734.03 part b.1., and replace with the following:

No fertilization shall be added to*: Temporary Grass Seeding - Wet Ground; Seed Mix #1 - Permanent Grass Seeding-Wet Ground, Modified; Seed Mix #2 -Grass and Forb Mix; Seed.*

Fertilizer shall be delivered to the site fully labeled and shall bear the name, trade name, trademark and warranty of the provider, and net weight of contents. The engineer reserves the right to reject any material that has been caked or otherwise damaged. If the fertilizer is not used immediately it shall be stored in a cool dry place in such a manner that its effectiveness is not impaired.

Add:

(f): *Non-Asphaltic Tackifier (Binder).* Collodial tackifier (binder) recommended by fiber mulch manufacturer for slurry application; non-toxic and free of plant growth or germination inhibitors.

734.04 Grass and Agricultural Seeds

Delete Subsection 734.04 part c., and replace with the following text and chart:

Temporary Grass Seeding - Wet Ground
Seed Mix #1 - Permanent Grass Seeding, Wet Ground, Modified
Seed Mix #2 - Grass and Forb Mix
Seed Mix #3 - Permanent Grass Seeding, Dry Ground, Modified

Seeding Chart					**Modification Factors for Seeding Rate (pounds per acre)**		
Temporary Grass Seeding - Wet Ground							
Species	Max % Weed Seeds	Min % Purity (PLS)	Min % Germination	Seeding Rate (lb/ac)	Seeding Period A (2/16 to 4/15)	Seeding Period B (4/16 to 8/15)	Seeding Period C (8/16 to 2/15)
Rough Barnyard Grass Echinochloa muricata, Echinochloa walteri	1.00	90	90	40	Add 65 lb/acre Winter Rye (Secale cereale) from 2/16 to 3/1		Add 65 lb/acre Winter Rye (Secale cereale) from 2/16 to 3/1
Total Seed Quantity (lb/ac)				40	105	40	105
Seed Mix # 1 Permanent Grass Seeding - Wet Ground, Modified							
Species	Max % Weed Seeds	Min % Purity (PLS)	Min % Germination	Seeding Rate (lb/ac)	Seeding Period A (2/16 to 4/15)	Seeding Period B (4/16 to 8/15)	Seeding Period C (8/16 to 2/15)
Agrostis alba	1.0	92	85	6.0	6.0	6.0	6.0
Andropogon virginicus	0.5	90	80	12.0	12.0	12.0	12.0
Panicum virgatum	1.0	95	80	4.0	4.0	4.0	4.0
Echinocloa spp.	1.0	90	80	11.0	11.0	11.0	11.0
Total Seed Quantity (lb/ac)				33.0	33.0	33.0	33.0
Seed Mix # 2 Grass and Forb Mix							
Species	Max % Weed Seeds	Min % Purity (PLS)	Min % Germination	Seeding Rate (lb/ac)	Seeding Period A (2/16 to 4/15)	Seeding Period B (4/16 to 8/15)	Seeding Period C (8/16 to 2/15)
Asclepias tuberosa	1.0	90	80	1.0	1.0	1.0	1.0
Species	Max %	Min %	Min %	Seedin	Seedin	Seedin	Seedin

	Weed Seeds	Purity (PLS)	Germination	g Rate (lb/ac)	g Period A (2/16 to 4/15)	g Period B (4/16 to 8/15)	g Period C (8/16 to 2/15)
Aster ericoides	1.0	90	80	1.0	1.0	1.0	1.0
Bouteloua curtipendula	1.0	90	80	2.5	2.5	2.5	2.5
Echinacea purpurea	1.0	90	80	0.5	0.5	0.5	0.5
Elymus canadensis	1.0	90	80	2.5	2.5	2.5	2.5
Koeleria cristata	1.0	90	80	1.0	1.0	1.0	1.0
Rudbeckia hirta	1.0	90	80	1.0	1.0	1.0	1.0
Schizachrium scoparium	1.0	90	80	2.5	2.5	2.5	2.5
Sporobalis heterolepsis	1.0	90	80	1.0	1.0	1.0	1.0
Total Seed Quantity (lb/ac)				13.0	13.0	13.0	13.0
Seed Mix # 3 Permanent Grass Seeding - Dry Ground, Modified							
Species	Max % Weed Seeds	Min % Purity (PLS)	Min % Germination	Seeding Rate (lb/ac)	Seeding Period A (2/16 to 4/15)	Seeding Period B (4/16 to 8/15)	Seeding Period C (8/16 to 2/15)
Agrostis alba	1.0	92	85	6.0	6.0		6.0
Festuca trachyphylla (Hard Fescue)	.15	98	85	100.0	100.0	100.0	100.0
Lolium perenne	.15	98	90	11.0	11.0	11.0	11.0
Secale cereale	.15	85	85	65.0	65.0		65.0
Total Seed Quantity (lb/ac)				182.0	182.0	111.0	182.0

Delete E. crusgalli' from 743.04 c. Seeding Chart Note 6

Delete Note 8 fully from 743.04 c. Seeding Chart Notes

Add the following to Subsection 734.04 Grass and Agricultural Seeds

The following shall apply for Seed Mix # l, Seed Mix # 3, and Seed Mix#4:

The pure live seed (PLS) value for each species of seed to be planted shall match or compensate for a percentage value of 100%. Each species shall have the minimum germination rate and percent purity listed in the Seeding Chart of the Subsection 734.04 part c. This value shall be obtained by testing each species of seed for the percent purity and the germination percent of the seed lot and multiplying the two values to determine the PLS value. The adjusted quantity to be sown shall be calculated as follows:

$$\text{Adjusted lb/acre} = \frac{\text{Intended PLS} \times \text{Intended lb/acre}}{\text{Actual PLS}}$$

Seeds having a total inert matter and weed seed content greater than 20% shall be rejected. Any sample containing greater than 1% by weight of weed species other than the species intended shall be rejected.

All seed shall be obtained from a source within 100 miles of the planting site. Contract collection of seed shall be carried out by an agency which has experience and research abilities in collecting native seed for a minimum of 5 years. If the Contractor is unable to locate a source within the specified area, the contractor shall submit an alternate source to the Engineer for approval. All seed shall be guaranteed by the vendor to be true to its name and variety. All seed furnished shall be guaranteed to be from the origin specified.

A minimum of thirty days prior to the time of seeding, the Contractor shall provide for the approval of the Engineer, a written description of the Seed Mixes showing the following:

a. Name and location of the seed supplier for each species of seed.
b. Origin and date of harvest of each species of seed.
c. A statement of the purity and germination rate of each species of seed.
d. The estimated number of seeds/lb. for each species of seed.
e. The percentage by weight for each seed species in a Seed Mix.
f. Pure live seed test date.
g. Other Crop Percentage
h. Inert Matter Percentage
i. Weed Seed Percentage

The following are the recommended Nurseries for permanent seeding:

1. Ernst Conservation Seeds
   9006 Mercer Pike Meadville PA 16335
   Tel no: 800-873-3321
   Fax: 8143365191
   Contract #23-073-03
   Contact: Amanda, Kim

2. Sylva Native Nursery
   3815 Roser Road
   Glen Rock, PA 17327
   Phone nos. (717) 227-0486
   Fax: (717) 227 -0484

Construction Methods

Delete Lime' from Subsection 734.06 General.

Add the following:

No seed shall be sown until the purity test has been carried out and the seed meets all the requirements mentioned under Subsection 734.04. Seeding shall be carried out between September 1 and November 15 for Seed Mix #1, Seed Mix #3, and Seed Mix #4. All seeding operations shall be completed within the seeding window as specified herein. If possible, seeding shall be performed before a forecasted rain event. Seeding shall not be done during periods of rain, severe drought, high winds, excessive moisture, or other conditions that preclude satisfactory results.

The engineer shall be informed in writing of conditions detrimental to the proper and timely completion of the work. The contractor shall identify the areas that are detrimental for seeding and consult with the Engineer to determine the corrective action. Seeding work is not to proceed until the condition is either corrected or a waiver is guaranteed by the engineer. No seeds shall be sown until the seed bed has been approved by the Engineer.

Site Preparation: Areas to be seeded shall be maintained at approved grades. All mechanical equipment for soil preparation or seeding shall be as approved and shall pass parallel to the contours unless otherwise directed by the Engineer

Prior to seeding, eroded, crusted soils shall be scarified or track with equipment to create an seed bed acceptable to the Engineer. The Contractor shall be responsible for performing all work necessary to achieve and maintain an acceptable seed bed prior to seeding as directed by the Engineer at no additional cost to the Department.

Seeding operations shall be initiated and completed within the seeding dates indicated for each of the mixes. The Contractor shall notify the Engineer at least forty-eight (48) hours in advance of the time he/she intends to begin sowing seed and shall not proceed with such work until permission to do so has been obtained. When delays in operations carry the work beyond the dates specified in the schedule, or when conditions of high winds, excessive moisture or ice are such that satisfactory results are not likely to be obtained at any stage of the work, the Engineer shall stop the work. The work shall be resumed with the Engineer's approval when the desired results are likely to be obtained or when approved corrective measures and procedures are adopted.

734.08 Seeding Slopes 1:3 (vertical to horizontal) or Steeper

Remove all references to Permanent Crown Vetch Seeding and the use of lime along from this sub-section.

Replace the wording in Subsection 734.08 part a. with the following:

Seeding for each area will be specified on the plans, as well as which seed mix will be required for which specific area.

Add to the first paragraph of Subsection 734.08 e.:
All hydroseeding shall include a tackifier (binder) and wood cellulose mulch as per the manufacturer's recommendation and material specifications as approved by the Engineer.

Basis of Payment:

Add the following to 734.10 Basis of Payment:

The Department reserves the right to delete from the Contract the furnishing and installing of one or more of the specified quantity listed in any seed mix and the right to add or subtract from the quantity or each species listed in any seed mix. The lump sum to be paid will be adjusted in accordance

with the contractor's unit prices as required above. There will be no extra compensation to the contractor if such additions and / or deletion are made.

11/17/10

735531 - SOIL RETENTION BLANKET MULCH, TYPE 1
735532 - SOIL RETENTION BLANKET MULCH, TYPE 2
735533 - SOIL RETENTION BLANKET MULCH, TYPE 3
735534 - SOIL RETENTION BLANKET MULCH, TYPE 4
735535 - SOIL RETENTION BLANKET MULCH, TYPE 5
735536 - SOIL RETENTION BLANKET MULCH, TYPE 6
735537 - SOIL RETENTION BLANKET MULCH, TYPE 7

Description:

This work consists of furnishing, placing and anchoring soil retention blanket mulch over seeded areas in accordance with notes and details on the Plans, these specifications and direction of the Engineer.

Materials:

The blanket mulch shall be one of the pre-approved products listed in the Approved Product List (APL) at the time of bid, for the type(s) of mulch required on the Plans.

Pre-approval procedures and the current APL may be obtained by writing to the Stormwater Engineer, Delaware Department of Transportation, P. O. Box 778, Dover, DE 19903 or calling (302) 760-2177 or viewing DelDOT's web page at **www.deldot.net/business**. The Contractor shall submit an 8" x 8" (200 mm x 200 mm) sample to the Stormwater Engineer to verify pre-approval. Also, the Contractor shall submit manufacturer's literature, including installation recommendations, to the Engineer.

The products on the APL have been used extensively on DelDOT projects with satisfactory results and/or have received satisfactory evaluations by the Texas Department of Transportation/Texas Transportation Institute (TxDOT/TTI).

Soil Retention Blanket Mulch, Types 1, 2, 3, 4 and 5, generally referred to as erosion control blankets (ECB), shall be composed entirely of 100% biodegradable material.

Soil Retention Blanket Mulch, Types 6 and 7, generally referred to as turf reinforcement mats (TRM), shall be composed of mostly non-degradable material.

In order for a product to be added to DelDOT's Approved Product List and be eligible for use in DelDOT's construction and maintenance works, the product must meet the above guidelines and receive a satisfactory evaluation by TxDOT/TTI. The Department will remove products from the APL when field performance is unsatisfactory.

Types of Soil Retention Blanket Mulch Application

Type 1. Sandy soils on slopes steeper than 3H:1V
Type 2. Sandy soils on slopes equal to or flatter than 3H:1V
Type 3. Top-soiled slopes steeper than 3H:1V
Type 4. Top-soiled slopes equal to or flatter than 3H:1V
Type 5. Top-soiled grass swale at maximum design shear stress less than or equal to 2 pounds per square foot (96 Pascals)
Type 6. Top-soiled grass swale at maximum design shear stress greater than 2 pounds per square foot (96 Pascals) and less than or equal to 6 pounds per square foot (287 Pascals)

Type 7. Top-soiled grass swale at maximum design shear stress greater than 6 pounds per square foot (287 Pascals) and less than or equal to 8 pounds per square foot (383 Pascals)

Construction Methods. The soil retention blanket mulch, shall be placed immediately after seeding operations have been completed or as approved by the Engineer, but in no case shall this period exceed 24 hours from the completion of the seeding operation. Prior to seeding and mulching, the area to be mulched shall be tracked, free of ruts, rocks or clods over 1 1/2 inches (40 millimeters) in maximum dimension and all sticks or other foreign materials which will prevent the close contact of the blanket with the soil. If as a result of rain, the prepared bed becomes crusted or eroded or if any eroded areas, ruts or depressions exist for any reason, the Contractor shall retrack and reseed the eroded areas.

Except for sprayed blanket mulch installation and anchorage of the soil retention blanket mulch shall be in accordance with notes and details in the Plans and the following DelDOT Standard Construction Details:

Standard No. E-9 for rolled blankets under Types 1 through 5
Standard No. E-25 for blankets under Types 6 and 7

Should the installation requirements of the manufacturer be more stringent than the above, the manufacturer's requirements shall govern.

Sprayed blanket mulches shall be applied as per the manufacturer's instructions and recommended rate. No application shall be permitted if rain is anticipated within 24 hours as determined by the Engineer.

Method of Measurement:

The quantity of soil retention blanket mulch will be measured in square yards (meters) of each type soil retention blanket mulch installed and accepted. Measurements for calculating the number of square yards (meters) will be made along the surface of the area covered. Overlaps of materials of any kind will not be measured.

Basis of Payment:

The quantity of soil retention blanket mulch will be paid for at the contract unit price per square yard (meter) per each type. Price and payment will constitute full compensation for furnishing and placing all materials; for all methods of anchorage and securement; for repairing any loose or raised pins or pegs or any loose, torn, or undermined fabric; and for all labor, equipment, tools, and incidentals required to complete the work.

01/24/01

759501 - FIELD OFFICE, SPECIAL

Description:

The field office work shall consist of furnishing, erecting, equipping, maintaining, and removing a singlewide modular office and adjacent parking area. The Contractor shall submit a specific location layout drawing and construction details for the proposed field office and its parking area for approval by the Engineer. The field office and parking area shall be for the exclusive use of Department Officials, Engineers, Designers, North Region Construction (NRC) Personnel, Consultants, and Inspectors.

The field office structure shall be free of asbestos and/or other hazardous materials. The field office and its parking area shall be constructed and installed in accordance with all applicable city, county, state, and federal codes. The Contractor shall be responsible for obtaining all required licenses and permits for installation and placement of the field office and its parking area. The costs of obtaining such licenses and permits to be incidental to the "Field Office, Special" Item. The field office shall be available for use by the Department continuously throughout the duration of the project.

Construction and Equipment:

The field office shall be new and have a minimum floor space of 600 square feet with minimum exterior dimensions of 50'-0" length by 12'-0" width. The floor to ceiling height shall be nominal 8'-0". The exterior walls, ceiling, and floor shall be insulated. The field office shall be of weather-proof construction, tightly floored and roofed, constructed with an air space above the ceiling for ventilation, supported above the ground, safely secured to its support if the support is an inground anchored foundation or otherwise by tie-downs to the ground, and fully skirted with rigid watertight covering overlapping the bottom of the exterior siding to the existing ground.

The Contractor shall provide entries to the field office by constructing a stair and deck platform with canopy at each exterior door. These entries shall be fabricated using treated dimension lumber, be constructed with hand and safety railing, be designed to last the life of the Contract, and conform to the requirements of the Architectural Accessibility Board and other federal, state and local boards, bodies and/or courts having jurisdiction in the Contract limits.

The Contractor shall construct and maintain an all weather parking area adjacent to the office of at least 2500 square feet and having a minimum of 10 functional parking spaces striped for full size cars. All weather pathways from the parking area to the entrances of the field office shall also be constructed and maintained. This parking area and entrance pathways shall have a minimum of 2" type "C" hot mix on top of minimum 6" graded aggregate subbase. Snow and/or ice shall be removed from the parking area and from the entrance pathways to the field office within 12 hours after each occurrence. Costs for furnishing, placing, and maintaining the aggregate base and hot mix, and for snow and/or ice removal, to be incidental to the Field Office, Special" Item.

The ground area 30'-0" from around the perimeter of the field office to the field office shall be landscaped and maintained. If the earthen grounds do not have a stand of weed free grass, the surface of this area shall be loosened to a depth of 4" and a satisfactory seedbed shall be prepared free of debris and extraneous matter. The area shall be seeded to a healthy stand of grass or sodded, after which the area shall be watered, mowed, and trimmed a minimum of three times a month during the growing seasons. Cost for this landscaping and maintenance to be incidental to the "Field Office, Special" Item.

The field office shall have full carpeting, kitchenette facilities, and interior and exterior paneling, lighting, and plumbing fixtures. The field office shall have a minimum of two (2) exterior doors, each

door having a passage and a deadbolt lock. These door locks shall be keyed and at least 2 complete sets of keys shall be supplied to the Engineer's representatives. The exterior doors shall be insulated or have storm doors. The field office shall have a minimum of six (6) windows, each window having a minimum glass area of 1150 square inches and a horizontal mini-blind covering the full glass area. The windows shall be insulated or have storm windows. All windows shall be equipped with a locking device. All doors and windows shall have screens installed and repaired when damaged.

At least two (2) outside water service connections shall be provided at the field office. Each water connection shall have a 3/4" frost proof hose bib with vacuum breaker and shall include 100 linear feet of 5/8" minimum diameter reinforced, industrial or commercial grade, soft rubber hose per connection.

The field office shall be provided with sufficient natural and artificial light and shall be adequately heated and cooled to provide comfortable working conditions.

The field office shall have satisfactory lighting, electrical outlets, heating equipment, exhaust fan, and air-conditioning connected to an operational power source. Plan and drawing areas shall have individual fluorescent lights situated over their worktables. Replacement fluorescent lights shall be furnished as required. Electrical current, water, and any fuel for heating equipment shall be furnished and the cost of such shall be borne by the Contractor. Maintenance of the heating, exhaust fan, and air-conditioning equipment shall be provided for by validated service contracts for the length of the Contract. These service contracts shall allow a Department authorized project person to deal directly with the service organization to request repair.

The Contractor shall furnish and maintain two fire extinguishers and provide one lighted "Exit" sign for each exterior passage door. Fire extinguisher(s) may be chemical or dry power and shall be UL Classification 10-B:C(min.) and shall be suitable for Types A:B:C fires. A commercial or industrial type first aid and safety kit suitable for project conditions and hazards (including snakebite) shall be provided and maintained to full capacity on a monthly basis.

The Contractor shall provide an alarm system for field office security with electronic, direct connection to a security service provider. The security system shall have interior motion, window, and entrance detectors and built in manual fire alarm. All windows of the field office shall be covered with steel bar grids as a deterrent to forced entry. The Contractor shall provide validated monitoring and service contracts for the length of the Contract. These contracts shall allow a Department authorized project person to deal directly with the security service provider to request service and/or repair.

The Contractor shall furnish and maintain an adequate supply of cold potable water, a minimum 23 cubic foot new refrigerator, and a minimum 900-watt new microwave oven. Maintenance of the potable water supply equipment, refrigerator, and microwave shall be provided for by validated service contracts for the length of the Contract. These service contracts shall allow a Department authorized project person to deal directly with the service organization to request repair.

Suitable indoor toilet facilities, conforming to the requirements of the State and Local Boards of Health or of other bodies or courts having jurisdiction in the area, shall be provided. When separate facilities for men and women are not available or required, a sign with the wording "Rest Room" (letter heights 1" minimum) shall be placed over the doorway and an adequate positive locking system shall be provided on the inside of the doorway to insure privacy. The facility(s) shall be maintained by the Contractor to be clean and in good working condition and shall be stocked by the Contractor with adequate lavatory and sanitary supplies at all times during the period of the Contract.

The Contractor shall be responsible for performing or for making arrangements for all necessary telephone connections and/or for their maintenance; for providing a new telephone equipment system,

for payment of all connections and the new telephone system equipment and its installation; and for final disconnection of the telephones.

The field office telephone system shall have a total of 5 lines consisting of 2 direct single lines with call forward busy feature, 2 dedicated computer use line with broadband connection for either DSL or cable, and 1 dedicated facsimile line and have 5 key sets consisting of 1 master key set having privacy feature, and 4 four-button key sets having privacy feature (1 set which may be for wall mounting), all for the official and exclusive use of the Engineer and other representatives of the Department. Arrangement shall be made to allow a Department authorized project person to deal directly with the telephone company to report outages and/or request repair. Monthly billings for the field office telephone system shall be received and paid by the Contractor. A copy of each bill shall be forwarded to the Project Resident for reimbursement on the subsequent contract pay estimate. The reimbursement will be for the amount of the bill only and shall not include any additional mark-up or profit.

For all other utilities, the Contractor shall be responsible for performing or for making arrangements for all necessary utility connections and/or for their maintenance; for payment of all utility connections, installations, service fees and bills; and for final disconnection of utilities.

The field office interior shall be furnished by the Contractor. The Contractor shall provide new and maintain the following office furnishings, all which are to be approved by the Engineer prior to installation in the field office. Placement of these furnishings shall be as directed by the Engineer. 6 full size office desks each with filing drawer and fully adjustable ergonomic design swivel chair with armrests and five leg base having wheel casters, 1 computer station with acoustical panels having minimum 60 NRC rating for privacy screen and fully adjustable ergonomic design swivel chair with armrests and five leg base having wheel casters, 1 large conference table for a minimum of 12 people with surrounding chairs with armrests, 2 folding tables minimum 6'-0" by 3'-0" each with ergonomic design straight back chair with armrests, 1 work table, 1 supply cabinet, 2 rough plan racks, 2 legal size filing cabinets with 4 drawers, 2 legal size fire-resistant filing cabinets with lock and key with 4 drawers and meeting fire underwriters' approval for not less than one hour test, 2 book shelves minimum 3'- 6" by 4'- 6", 3 vertical surface legal size three compartment pockets, 2 dry erase boards minimum 4' by 3' each with markers and erasers, and 2 cork bulletin boards minimum height 3' by 2'. These office furnishings will remain the property of the Contractor at the conclusion of the project.

The Contractor shall also furnish new and maintain the following office equipment, all which are to be approved by the Engineer prior to installation in the field office. The required equipment will enable the Department to synchronize project record keeping and office functions. The equipment shall be delivered in working and useable condition:

4 heavy-duty calculators having extra large 12-digit fluorescent display, full size keyboard with contoured keys, two-color ribbon printer, and AC powered;

1 compact plain paper copying machine and cabinet with stationary platen, bypass feeding, and dual loading cassette system with cassettes for letter, legal, and ledger size paper. Copy machine to have zoom and preset reduction and enlargement features, automatic two (2) sided copying, automatic document feeder with minimum 30 sheet capacity, and 20 bin collator with automatic stapling capacity;

1 desktop model, compact facsimile machine with automatic paper cutter, 10-sheet feeder, halftones with 16 levels of gray, 50-number auto dialing, answering machine hook-up, large LCD readout, date and time stamp, and advanced telephone features;

1 DVD camcorder with on-screen programming, full-range auto focus, high-speed shutter, high-resolution, bookmark search, time-lapse recording, rechargeable batteries and charger, tripod, and protective carrying case;

1 integrated color monitor and DVD/VHS cassette recorder having minimum 20" screen, automatic on/play/rewind/stop, remote, full range speaker, and digital auto tracking;

1 micro cassette recorder, having fast playback, voice-activated system, three-digit tape counter, silent auto-stop and pause, two tape speeds, one-touch and follow-up, built-in condenser microphone, cue and review, and rechargeable with combination battery charger/AC adapter;

1 telephone answering machine having all-digital recording, 14 minute message capacity, selectable message time, voice prompt assistance, day/time stamp, call screening, two-digit LED message indicator, toll saver, power failure memory back-up, and message interrupt from any station; and

2 digital cameras with minimum 1/2.7" 4.0 mega pixel, 3X optical / 6X precision digital zoom, 12-bit DXP A/D conversion, 2.5" 123K pixel LCD display, 5-mode program AE and each with dual media slots, SXGA/XGA/VGA image resolution, E-mail mode. Also intelligent flash with red-eye protection, MPEG movie mode, clip motion, light metering, TEXT mode (GIF), playback zoom and resize, white balance, lithium battery system and in-camera picture effects, memory stick/card (minimum 256MB) capability, and storage case.

Consumables as required to manage the business of the project shall be provided for all office equipment for the length of the Contract. These consumables shall be furnished on request and shall include but not be limited to paper, tapes, ribbons, rolls, toner, cleaning kits, microcassette tapes and batteries, answering machine cassettes, camera batteries and memory sticks and/or discs, DVD and CD R/RW media, etc.

Maintenance of all office equipment shall be provided for by a validated service contract for the length of the Contract. This service contract shall allow a Department authorized project person to deal directly with the service organization to request repair.

Included in the unit price bid per month for the Field Office on this project will be two (2) IBM compatible Microcomputer Systems both which will be furnished and maintained by the Contractor for use by the Engineer. The specified computer systems will synchronize the construction management functions of the Department to monitor, report, and perform the accounting of the project work. The computer systems and all their related equipment specified below shall be furnished new and remain the property of the Contractor at the conclusion of the Contract. A detailed listing of the proposed computer systems and all their related equipment to be provided by the Contractor shall be submitted for approval by the Engineer prior to furnishing the Microcomputer Systems. The Microcomputer Systems shall be Laptop Computer Systems each with docking station. Each of the two (2) Microcomputer Systems shall consist of:

Central Processing Unit (CPU) – Lap Top

Intel Core 2, Duo processor and wireless networking capability included,

Minimum 2.0 GB RAM with expansion capability to at least 4.0 GB and clock/calendar card equivalent, and

Microsoft "Windows® XP Professional" or Windows® license downgrade to "Windows® XP Professional" operating system;

Memory (Storage)

CD/DVD +/- RW with double layer write capability, and 120GB hard drive minimum, integrated Ethernet 10/100, and internal modem. Included software shall support double layer media writing and automatic backup of data;

Monitor (Cathode Ray Tube)

Monitor for docking station and docking station - Super Video Graphics Adapter (SVGA) minimum. 19" minimum diagonal visual area flat panel with .26 dot pitch capable of multiple frequency 256 color graphics and at least 1024 pixel resolution. Swivel base with low radiation and eyestrain protection, brightness and contrast control and

Laptop - shall have 15.4" display minimum;

Color Graphics Card

PCIe video card or integrated video;

Keyboard

Keyboard shall be ergonomic, enhanced layout minimum with keyboard interface cable;

Printers

LaserJet HP 2550N network capable printer or latest model with 64 MB minimum total memory having up to 600 dpi resolution and using HPL6 printer language with all necessary software and cables for proper operation; and a HP Desk Jet color printer or latest model with photo quality print capability and with all necessary software, equipment, and cables for general operation as well as connection and sharing on a local network;

Scanner

A HP6100 color scanner with HP5770 ScanJet ADF (or equivalent brand) with all necessary software, equipment, and cables for general operation as well as connection and sharing on a local network;

Software

The latest version programs for application management (operating system), word processing, spreadsheet, and anti-virus shall be provided with all user manuals. Upgrades, maintenance, and full technical support by the manufacturer shall be provided for the length of the Contract. The required software will enable the Department to synchronize accounting and record keeping functions between the project, District, and Department offices. A list of programs to be provided shall be submitted to the Engineer for approval. Software, other than for application management and anti-virus, is to be delivered unopened to the Department's administrative office. All software is to be compatible with and for use to run on

"Windows® XP Professional". The required applications software follows and is to be latest version unless noted:

office suite - "Microsoft® Office XP Professional",
antivirus - "McAfee® Total Protection for Small Business,
software supporting creation of DVD +/- R/RW disks (supporting double layer media writing) and DVDR and DVDRW disks using DVDRW drive, for example: Ahead Nero, Roxio DVD/CD Creator, or some equivalent product. Note: software commonly included as part of the standard CDRW upgrade/standalone package is acceptable if included with the unit;

Related Equipment

Wireless networking hub/router (802.11g or better) with all associated hardware (adapters, cables, etc) and soft to enable wireless networking and internet connection sharing for all office computers and printers,

An electrical outlet with dedicated circuit for the main computer unit,

An optical mouse with proper driving software having complete Microsoft emulation,

An internal 56/28.8/14.4 fax modem with MNP5 error checking and complete Hayes emulation having high-speed 14.4 fax capability and regular data transmission between 2400 and 56 baud, with the latest version proper driving software,

Necessary cables for proper operation,

An uninterruptible power supply (UPS) units for protection from power loss or fluctuation, minimum of 6 outlets, adequate to provide a minimum of 30 minutes backup power for an orderly shut down of the computer system with software and connections for automatic system shutdown,

24 bit Sound Blaster compatible PCI soundcard with quality desktop speakers,

A combination surge, spike, and noise protection device with receptacles for all peripherals (may be in combination with the UPS power supply),

A wrist rest suitable for use with the furnished keyboard,

Cleaning kits for disk drives,

An anti-glare filter with grounding wire suitable for use with the furnished monitor, and

All cards, hardware, and operating, anti-virus, and equipment software to be fully installed and operational;

Maintenance and Service

Maintenance of all specified equipment and components shall be provided for by a validated service agreement for the length of the Contract. Maintenance (upgrades, replacement, full technical support) for each software application shall be provided for by validated maintenance agreement for the length of the Contract. These agreements shall allow an authorized project person to deal directly with the service organization to request repair or the maintenance organization to request assistance; and

Supplies

Consumables as required to manage the business of the project shall be provided for the Microcomputer Systems for the length of the Contract. These consumables shall be furnished on request and include but not be limited to 3-1/2" double sided high density micro floppy diskettes, compatible diskettes for provided digital cameras and memory stick media, DVDR and DVDRW media compatible supporting operational minimum to maximum speed of the DVD/RW drive unit, cut sheet paper and labels compatible with the printers, hardware and screen cleaners, and toner cartridges.

Maintenance of the field office including its adjacent parking area, for the time required, shall consist of maintenance and/or replacement of all provided items, security system, furniture and equipment, computer systems, providing lavatory supplies, providing trash containers and waste baskets, providing entrance mats at each door, providing replacement items for lighting fixtures, maintaining all utilities, providing satisfactory and sanitary janitorial and waste disposal services twice a week, providing cleanup of trash and debris on the parking lot and landscaped area once a week, and shall be included in the monthly unit cost.

The Contractor shall provide and deliver a current copy of all validated field office, equipment, and computer maintenance, service, assistance and/or monitoring agreements and/or contracts as mentioned hereinabove to the Department's administrative office on or before the first day the field office is ready for use.

Method of Measurement:

This item will not be measured but will be paid for on a monthly basis. Partial months will be paid at the rate of 0.033 months per day.

Basis of Payment:

The field office will be paid for on a unit price bid per month, which price shall be full compensation for performing the work specified and the furnishing of all materials, labor, tools, equipment and incidentals necessary to maintain the field office and its adjacent parking area and restore the field office area and adjacent parking area to match the original site condition. No separate payment will be made for costs involved for removing hazardous material or underground tanks to install these offices or the parking area.

Payment will be made only for the actual number of months that the office is acceptably provided by the Contractor.

The field office shall be ready for use not later than thirty (30) calendar days after the date of the fully executed Contract or before construction operations begin.

10/28/10

763501 - CONSTRUCTION ENGINEERING

Description:

This work consists of construction lay out including; stakes, lines and grades as specified below. Subsection 105.10 Construction Stakes, Lines and Grades of the Standard Specifications is voided.

Based on contract plans and information provided by the Engineer, the Contractor shall stake out right-of-way and easements lines, limits of construction and wetlands, slopes, profile grades, drainage system, centerline or offset lines, benchmarks, structure working points and any additional points to complete the project.

The Engineer will only establish the following:

(a) Original and final cross-sections for borrow pits.
(b) Final cross-sections for all excavation items.
(c) Line and grade for extra work added on to the project plans.

Equipment:

The Contractor shall use adequate equipment/instruments in a good working order. He/she shall provide written certification that the equipment/instrument has been calibrated and is within manufacturer's tolerance. The certification shall be dated a maximum of 9 months before the start of construction. The Contractor shall renew the certification a minimum of every 9 months. The equipment/instrument shall have a minimum measuring accuracy of [3mm+2ppmxD] and an angle accuracy of up to 2.0 arc seconds or 0.6 milligons. If the Contractor chooses to use GPS technology in construction stakeout, the Contractor shall provide the Engineer with a GPS rover for the duration of the contract. The GPS rover shall be in good working condition and of similar make and model used by the Contractor. The Contractor shall provide up to 8 hours of formal training on the Contractor's GPS system to a maximum of four Engineer's appointees. At the end of the contract, the Engineer will return the GPS rover to the Contractor. If any of the equipment/instruments are found to be out of adjustment or inadequate to perform its function, such instrument or equipment shall be immediately replaced by the Contractor to the satisfaction of the Engineer.

Engineering/Survey Staff:

The Contractor shall provide and have available for the project an adequate engineering staff that is competent and experienced to set lines and grades needed to construct the project. The engineering personnel required to perform the work outlined herein shall have experience and ability compatible with the magnitude and scope of the project. Additionally, the Contractor shall employ an engineer or surveyor licensed in the State of Delaware to be responsible for the quality and accuracy of the work done by the engineering staff. When individuals or firms other than the Contractor perform any professional services under this item, that work shall not be subject to the subcontracting requirements of Subsection 108.01 of the Standard Specifications. The Contractor shall assume full responsibility for any errors and/or omissions in the work of the engineering staff described herein. If construction errors are caused due to erroneous work done under Construction Engineering the Contractor accepts full responsibility, no matter when the error is discovered. Consideration will not be given for any extension of contract time or additional compensation due to delays, corrective work, or additional work that may result from faulty and erroneous construction stakeout, surveying, and engineering required by this specification.

Construction Methods:

Performance Requirements:

(a) Construction Engineering shall include establishing the survey points and survey centerlines; finding, referencing, offsetting the project control points; running a horizontal and vertical circuit to check the accuracy of given control points. Establishing plan coordinates and elevations marks for culverts, slopes, subbase, subsurface drains, paving, subgrade, retaining walls, and any other stakes required for control lines and grades; and setting vertical control elevations, such as footings, caps, bridge seats and deck screed. The Contractor shall be responsible for the preservation of the Department's project control points and benchmarks. The Contractor shall establish and preserve any temporary control points (traverse points or benchmarks) needed for construction. Any project control points (traverse points) or benchmarks conflicting with construction of the project shall be relocated by the Contractor. The Contractor as directed by the Engineer must replace any or all stakes that are destroyed at any time during the life of the contract. The Contractor shall re-establish centerline points and stationing prior to final cross-sections by the Engineer. The Vertical Control error of closure shall not exceed 0.05 ft times [Square root of number of miles in the level run] (0.01 m times [square root of number of kilometers]). The Horizontal Control accuracy ratio shall not exceed an error of closure of 1 foot per 20,000 feet (1 meter per 20,000 meters or 1:20,000) of distance traversed prior to adjustment.

(b) The Contractor shall perform construction centerline layout of all roadways, ramps and connections, etc. from project control points set by the Engineer. The Contractor using the profiles and typical sections provided in the plans shall calculate proposed grades at the edge of pavement or verify information shown on Grades and Geometric sheets.

(c) The Contractor shall advise the Engineer of any horizontal or vertical alignment revisions needed to establish smooth transitions to existing facilities. The Contractor shall immediately bring to the attention of the Engineer any potential drainage problem within the project limits. The Engineer must approve any proposed variation in profile, width or cross slope.

(d) The Contractor shall establish the working points, centerlines of bearings on bridge abutments and on piers, mark the location of anchor bolts to be installed, check the elevation of bearing surfaces after they are ground and set anchor bolts at their exact elevation and alignment as per Contract Plans. Before completion of the fabrication of beams for bridge superstructures, the Contractor shall verify by accurate field measurements the locations both vertically and horizontally of all bearings and shall assume full responsibility for fabricated beams fitting and bearing as constructed. After beam erection and concurrently with the Department project surveyors, the Contractor shall survey top of beam elevations at a maximum of 10-ft (3.0-meter) stations and compute screed grades. These shall be submitted to the Engineer for review and approval before the stay in place forms are set. Construction stakes and other reference control marks shall be set at sufficiently frequent intervals to assure that all components of the structure are constructed in accordance with the lines and grades shown on the plans. The Contractor will be responsible for all structure alignment control, grade control and all necessary calculations to establish and set these controls.

(e) The Contractor, using contract plans, shall investigate proposed construction for possible conflicts with existing and proposed utilities. The Contractor shall then report such conflicts to the Engineer for resolution. All stakes for advanced utility relocation, which will be performed by others, shall be paid for under item 763597 – Utility Construction Engineering.

(f) The Contractor shall be responsible for the staking of all sidewalk and curb ramp grades in accordance with the plans and the Departments Standard Construction Details. The Contractor shall review the stakeout with the Engineer prior to construction. The Engineer must approve any deviation from plans, Department Standard Construction Details and Specifications in writing. The Contractor shall be responsible for any corrective actions resulting from problems created by adjustments if they fail to obtain such approval.

(g) If wetland areas are involved and specifically defined on the Plans the following shall apply:

i. It is the intent of these provisions to alert the Contractor, that he/she shall not damage or destroy wetland areas, which exist beyond the construction limits. These provisions will be strictly enforced and the Contractor shall advise his/her personnel and those of any Subcontractor of the importance of these provisions.

ii. All clearing operations and delineation of wetlands areas shall be performed in accordance with these Special Provisions. Before any clearing operation commences the Contractor shall demarcate wetlands at the Limits of Construction throughout the entire project as shown on the Plans labeled as Limits of Construction or Wetland Delineation to the satisfaction of the Engineer.

iii. The material to be used for flagging the limits of construction shall be orange vinyl material with the wording "Wetland Boundary" printed thereon. In wooded areas, the flagging shall be tied on the trees, at approximate 20-foot (6.1 meter) intervals through wetland areas. In open field and yard areas that have been identified as wetlands, 3 foot (one meter) wooden grade stakes shall be driven into the ground at approximate 20 foot (6.1 meter) intervals and tied with the flagging.

iv. If the flagging has been destroyed and the Engineer determines that its use is still required, the Contractor shall reflag the area at no cost to the Department. If the Contractor, after notification by the Engineer that replacement flagging is needed, does not replace the destroyed flagging within 48 hours, the Engineer may proceed to have the area reflagged. The cost of the reflagging by the Engineer will be charged to the Contractor and deducted from any monies due under the Contract.

v. At the completion of construction, the Contractor shall remove all stakes and flagging.

vi. The Contractor shall be responsible for any damages to wetlands located beyond the construction limits, which occurs from his/her operations during the life of the Contract. The Contractor shall restore all temporarily disturbed wetland areas to their preconstruction conditions. This includes restoring bank elevations, streambed and

wetland surface contours and wetlands vegetation disturbed or destroyed. The expense for this restoration shall be borne solely by the Contractor.

Submittals:

All computations necessary to establish the exact position of all work from the control points shall be made and preserved by the Contractor. All computations, survey notes and other records necessary to accomplish the work shall be made available to the Department in a neat and organized manner at anytime as directed by the Engineer. The Engineer may check all or any portion of the stakeout survey work or notes made by the Contractor and any necessary correction to the work shall be made as soon as possible. The Contractor shall furnish the Engineer with such assistance as may be required for checking all lines, grades, and measurements established by the Contractor and necessary for the execution of the work. Such checking by the Engineer shall not relieve the Contractor of his/her responsibility for the accuracy or completeness of the work.

The Contractor shall submit any of the following at the Engineer's request:

(a) Proposed method of recording information in field books to ensure clarity and adequacy.

(b) A printout of horizontal control verification, as well as coordinates, differences and error of closure for all reestablished or temporary Control Points.

(c) A printout of vertical control verification, with benchmark location elevation and differences from plan elevation.

(d) Sketch of location of newly referenced horizontal control, with text printout of coordinates, method of reference and field notes associated with referencing control.

(e) Description of newly established benchmarks with location, elevation and closed loop survey field notes.

(f) All updated electronic and manuscript survey records.

(g) Stakeout plan for each structure and culvert.

(h) Computations for buildups over beams, screed grades and overhang form elevations.

(i) A report showing differences between supplied baseline coordinates and field obtained coordinates, including a list of preliminary input data.

(j) Any proposed plan alteration to rectify a construction stakeout error, including design calculations, narrative and sealed drawings.

(k) Baseline for each borrow pit location.

(l) Detailed sketch of proposed overhead ground mounted signs or signals showing obstructions that may interfere with their installation.

(m) Copies of cut sheets.

Method of Measurement:

The quantity of Construction Engineering will not be measured.

Basis of Payment:

Payment will be made at the Lump Sum price bid for the item "Construction Engineering". The price bid shall include the cost of furnishing all labor, equipment, instruments, stakes and other material necessary to satisfactorily complete the work as herein described under this item for all roads and structures that are a part of the contract. Adjustment in payment will be made for the deletion or addition of work not shown in the contract documents.

Monthly payment will be made under this item in proportion to the amount of work done as determined by the Engineer.

8/29/07

763502 - MAINTENANCE OF RAILROAD TRAFFIC (AMTRAK)
National Railroad Passenger Corporation (Amtrak)

Description:

This item shall consist of complying with all the terms and conditions set and defined under these specifications and notes on the Plans while performing the construction activities of this Contract.

Refer to Bid Item 763635 “Railroad Access Permits" for additional requirements and stipulations specific to Amtrak, CSX Transportation, and Norfolk Southern Railroad.

The Contractor shall note that the proposed work involves construction operations on the property owned and/or controlled by AMTRAK, and will be performed adjacent to the high speed main electrified tracks of the Railroad, and in the vicinity of high voltage line of the Railroad. In working near these lines, great care must be exercised and the Railroad's rules detailing requirements for clearance to be maintained, between equipment and energized wires and other instructions in regard to working in the vicinity of their electric operations and requirements must be strictly observed whenever the tracks, structures, or properties of AMTRAK are involved or affected.

General:

Whenever in these Specifications and/or other Contract Documents the term "Railroad" is used without further qualifications, it shall mean and be taken to mean the National Railroad Passenger Corporation or Amtrak; "Chief Engineer" shall mean Amtrak's Chief Engineer or his/her duly authorized representative; and "Permittee" and / or "Contractor" shall mean the entity that will be performing on or about Amtrak's property, i.e. DelDOT's Contractor or their subcontractors. The terms “DelDOT” or “Department” shall mean the Delaware Department of Transportation.

Pre-Entry Meeting:

Before entry of Permittee and/or Contractors onto Railroad's property, a pre-entry meeting shall be held at which time Permittee and/or Contractors shall submit for written approval of the Chief Engineer, plans, computations and a detailed description of proposed methods for accomplishing the work, including methods for protecting Railroad's traffic. Any such written approval shall not relieve Permittee and/or Contractor of their complete responsibility for the adequacy and safety of their operations.

Rules, Regulations and Requirements:

Railroad traffic shall be maintained at all times with safety and continuity, and Permittee and/or Contractors shall conduct their operations in compliance with all rules, regulations, and requirements of Railroad (including these Specifications) with respect to any work performed on, over, under, within or adjacent to Railroad’s property. Permittee and/or Contractors shall be responsible for acquainting themselves with such rules, regulations and requirements. Any violation of Railroad’s safety rules, regulations, or requirements shall be grounds for the immediate suspension of Permittee and/or Contractor work, and the re-training of all personnel, at Permittee’s expense.

Track Monitoring: Refer to Drawing G-1 for track monitoring requirements and procedures.

Maintenance of Safe Conditions:

If tracks or other property of Railroad are endangered during the work, Permittee and/or Contractor shall immediately take such steps as may be directed by Railroad to restore safe conditions, and upon failure of Permittee and/or Contractor to immediately carry out such direction, Railroad may take whatever steps are reasonably necessary to restore safe conditions. All costs and expenses of restoring safe conditions, and of repairing any damage to Railroad's trains, tracks, right-of-way or other property caused by the operations of Permittee and/or Contractors, shall be paid by Permittee.

Protection in General:

Permittee and/or Contractors shall consult with the Chief Engineer to determine the type and extent of protection required to ensure safety and continuity of railroad traffic. Any Inspectors, Track Foremen, Track Watchmen, Flagmen, Signalmen, Electric Traction Linemen, or other employees deemed necessary by Railroad, at its sole discretion, for protective services shall be obtained from Railroad by Permittee and/or Contractors. The cost of same will be paid directly to Railroad by **DelDOT**. The provision of such employees by Railroad, and any other precautionary measures taken by Railroad, shall not relieve Permittee and/or Contractors from their complete responsibility for the adequacy and safety of their operations.

Protection for Work Near Electrified Track or Wire:

Whenever work is performed in the vicinity of electrified tracks and/or high voltage wires, particular care must be exercised, and Railroad's requirements regarding clearance to be maintained between equipment and tracks and/or energized wires, and otherwise regarding work in the vicinity of electrified tracks, must be strictly observed. No employees or equipment will be permitted to work near overhead wires, except when protected by a Class A employee of the Railroad. Permittee and/or Contractors must supply an adequate length of grounding cable (4/0 copper with approved clamps) for each piece of equipment working near or adjacent to any overhead wire.

Fouling of Track or Wire:

No work will be permitted within twenty-five (25) feet of the centerline of track or the energized wire or have potential of getting within twenty-five (25) feet of track wire without the approval of the Chief Engineer's representative. Permittee and/or Contractors shall conduct their work so that no part of any equipment or material shall foul an active track or overhead wire without the written permission of the Chief Engineer's representative. When Permittee and/or Contractors desire to foul an active track, they must provide the Chief Engineer's representative with their site-specific work plan a minimum of sixty (60) calendar days in advance, so that, if approved, arrangements may be made for proper protection of Railroad. Any equipment shall be considered to be fouling a track or overhead wire when located (a) within fifteen (15) feet from the centerline of the track or within fifteen (15) feet from the wire, or (b) in such a position that failure of same, with or without a load, would bring it within fifteen (15) feet from the centerline of the track or within fifteen (15) feet from the wire and requires the presence of the proper Railroad protection personnel.

The Permittee and/or Contractors shall note that trackbed grading extends closer than fifteen (15) to the centerline of the adjacent track and existing access along much of the corridor is also within the fouling limit. As such, a fouling plan(s) will be required for this project

Amtrak has indicated that they will erect and maintain a fence / safety barrier approximately four (4) feet from the end of the existing track ties, or a distance of Eight Feet – Three inches (8'-3") from the centerline of the nearest track (see Drawing TS-1). If installed by Amtrak, this fence / safety barrier will be considered a work area that does not foul the nearest track or overhead energized catenary wire. Nevertheless, protection personnel will be required and the positioning of swing equipment will be at the discretion of the Chief Engineer's representative.

As depicted in the Catenary Structure Reference drawings, high voltage electric lines (132 kV and 230 kV) are located above the catenary lines. Although requests may be submitted for de-energizing catenary lines, the Contractor shall develop his work plan assuming that the high voltage lines will remain energized at all times.

Track Outages:

Permittee and/or Contractors shall verify the time and schedule of track outages from Railroad before scheduling any of their work on, over, under, within, or adjacent to Railroad's right-of-way. Railroad does not guarantee the availability of any track outage at any particular time. Permittee and/or Contractors shall schedule all work to be performed in such a manner as not to interfere with Railroad operations. Permittee and/or Contractors shall use all necessary care and precaution to avoid accidents, delay or interference with Railroad's trains or other property.

Amtrak has indicated that train dispatch requirements MAY allow closure of the adjacent track (single track operation) from 10:00 PM to 5:00 AM each night. Requests for these track and catenary outages shall be submitted a minimum of sixty (60) days prior to the date requested. De-energizing and re-energizing the catenary may require up to 1 hour on each end of this work window, reducing the effective work time to 5 hours.

In addition, "55 Hour Work Windows" (from10:00 PM Friday to 5:00 AM Monday) MAY be approved up to once per month. Requests for these track and catenary outages may require requests to be submitted up to one-hundred-eighty (180) days prior to the date requested. De-energizing and re-energizing the catenary may require up to 1 hour on each end of this work window, reducing the effective work time to 53 hours.

Demolition:

During any demolition, Contractor must provide horizontal and vertical shields, designed by a Professional Engineer registered in the state in which the work takes place. These shields shall be designed in accordance with the Railroad's specifications and approved by the Railroad, so as to prevent any debris from falling onto the Railroad's right-of-way or other property or into streams. A grounded temporary vertical protective barrier must be provided if an existing vertical protective barrier is removed during demolition. In addition, if any openings are left in an existing bridge deck, a protective fence must be erected at both ends of the bridge to prohibit unauthorized persons from entering onto the bridge.

Ballasted track structure shall be kept free of all construction and demolition debris.

Equipment Condition:

All equipment to be used in the vicinity of operating tracks shall be in "certified" first-class condition so as to prevent failures that might cause delay to trains or damage to Railroad's property. No equipment shall be placed or put into operation near or adjacent to operating tracks without first obtaining permission from the Chief Engineer's representative. Under no circumstances shall any equipment or materials be placed or stored within twenty-five (25) feet from the centerline of an outside track, except as approved by the Site Specific Safety Work Plan. To ensure compliance with this requirement, Permittee and/or Contractors must establish a twenty-five (25) foot foul line prior to the start of work by either driving stakes, taping off or erecting a temporary fence, or providing an alternate method as approved by the Chief Engineer's representative. Permittee and/or Contractors will be issued warning stickers which must be placed in the operating cabs of all equipment as a constant reminder of the twenty-five (25) foot clearance envelope.

Storage of Materials and Equipment:

No material or equipment shall be stored on Railroad's property without first having obtained permission from the Chief Engineer. Any such storage will be on the condition that Railroad will not be liable for loss of or damage to such materials or equipment from any cause.

If permission is granted for the storage of compressed gas cylinders on Railroad property, they shall be stored a minimum of 25 feet from the nearest track in an approved lockable enclosure. The enclosure shall be locked when the Permittee and/or Contractor is not on the project site.

Condition of the Railroad's Property:

Permittee and/or Contractors shall keep Railroad's property clear of all refuse and debris from its operations. Upon completion of the work, Permittee and/or Contractors shall remove from Railroad's property all machinery, equipment, surplus materials, falsework, rubbish, temporary structures, and other property of Permittee and/or Contractors and shall leave Railroad's property in a condition satisfactory to the Chief Engineer.

Safety Training:

All individuals, including representatives and employees of Permittee and/or Contractors, before entering onto Railroad's property or coming within twenty-five (25) feet of the centerline of the track or energized wire shall first attend Railroad's Safety Orientation Class. The Safety Orientation Class will be provided by Railroad's Safety Representative at Permittee's expense. A photo I.D. will be issued and must be worn/displayed while on Railroad property. All costs of complying with Railroad's safety training shall be at the sole expense of Permittee. Permittee and/or Contractors shall appoint a qualified person as their Safety Representative. He/she shall continuously ensure that all individuals comply with Railroad's safety requirements. All safety training records shall be maintained with the site specific work plan.

The Contractor shall appoint a qualified person as its Safety Representative. He/she must be approved by the Railroad's Representative and will be given special instruction on conducting the Safety Orientation Class. The Contractor's appointee will be responsible for giving instruction to those Contractor/subcontractor employees who will come onto the Railroad's property for short periods of time after the initial Safety Orientation Class has been given by the Railroad, and will keep the Railroad's Safety Representative informed as to which employees have attended the Class and received the required safety training. The safety representative shall continuously assure that all individuals comply with the Railroad's safety requirements. All safety training records shall be maintained with the site specific work plan.

No Charges to Railroad:

It is expressly understood that neither these Specifications, nor any document to which they are attached, include any work for which Railroad is to be billed by Permittee and/or Contractors, unless Railroad gives a written request that such work be performed at Railroad's expense.

Railroad Protective Services:

DelDOT will pay directly to the Railroad, charges by the Railroad for protective services. Wages of the Railroad's Inspector and/or Engineers are deemed to be also included in the Railroad's protection services. The services are performed to insure safe operations of trains when construction work would, in the Railroad's opinion, be a hazard to Railroad operations.

Protection services will be required whenever the Contractor is performing work over, under, or adjacent to the Railroad track or right-of-way, such as excavating, sheeting, shoring, erection, and removal of forms, handling material, using equipment which by swinging or by failure could foul the

track, and when any other type of work being performed, in the opinion of the Railroad, requires such service.

Insurance:

In addition to any other form of insurance or bonds required under the terms of the Project, and before any work on the Project is commenced, the Contractor shall procure and maintain, at its sole cost and expense, the types of insurance specified below. Contractor shall evidence such coverage by submitting to Amtrak the original Railroad Protective Liability Policy and certificates of insurance evidencing the other required insurance, prior to commencement of Operations. All insurance shall be procured from insurers authorized to do business in the jurisdiction(s) where the Operations are to be performed. Contractor shall require all subcontractors to carry the insurance required herein, or Contractor may, at its option, provide the coverage for any or all subcontractors, provided the evidence of insurance submitted by Contractor to Amtrak so stipulates. The insurance shall provide for thirty (30) days prior written notice to Amtrak in the event coverage is substantially changed, canceled or non-renewed. All insurance shall remain in force until all Operations are satisfactorily completed (unless otherwise noted below), all Contractor personnel and equipment have been removed from Railroad property, and any work has been formally accepted. Contractor's failure to comply with the insurance requirements set forth herein shall constitute a violation of the Agreement.

A. WORKERS' COMPENSATION INSURANCE: complying with the requirements of the statutes of the jurisdiction(s) in which the Operations will be performed, covering all employees of Contractor. Employer's Liability coverage with limits of not less than $1 million each accident or illness shall be included.

   In the event the Operations are to be performed on or over navigable waterways, a Longshoremen and Harbor Workers' Compensation Act Endorsement and a Maritime Coverage Endorsement are to be added, including coverage for wages, transportation, maintenance and cure

B. GENERAL LIABILITY INSURANCE: covering liability of Contractor with respect to all operations to be performed and all obligations assumed by Contractor under the terms of the Agreement. Products-completed operations, independent contractors and contractual liability coverages are to be included, with the contractual exclusion related to construction/demolition activity within fifty (50) feet of the railroad and any Explosion/Collapse/Underground (X-C-U) exclusions deleted. The policy shall name National Railroad Passenger Corporation, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue as additional insureds with respect to the operations to be performed. Coverage under this policy shall have limits of liability of not less than $20 million each occurrence, combined single limit, for bodily injury (including disease or death), personal injury and property damage (including loss of use) liability.

C. AUTOMOBILE LIABILITY INSURANCE: covering the liability of Contractor arising out of the use of any vehicles which bear, or are required to bear, license plates according to the laws of the jurisdiction in which they are to be operated, and which are not covered under Contractor's Commercial General Liability insurance. The policy shall name National Railroad Passenger Corporation, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue as additional insureds with respect to the operations to be performed. Coverage under this policy shall have limits of liability of not less than $1 million each occurrence, combined single limit, for bodily injury and property damage (including loss of use) liability.

In the event Contractor or any subcontractor will be transporting and/or disposing of any hazardous material or waste off of the jobsite, a MCS-90 Endorsement is to be added to this policy and the limits of liability are to be increased to $5 million each occurrence.

D. RAILROAD PROTECTIVE LIABILITY INSURANCE: covering the Operations performed by Contractor or any subcontractor within fifty (50) feet vertically or horizontally of railroad tracks. The current ISO Occurrence Form (claims-made forms are unacceptable) in the name of the National Railroad Passenger Corporation (and as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue) shall have limits of liability of not less than $10 million each occurrence, combined single limit, for Coverages A and B, for losses arising out of injury to or death of all persons, and for physical loss or damage to or destruction of property, including the loss of use thereof. A $20 million annual aggregate shall apply. Additionally, Policy Endorsement CG 28 31 - Pollution Exclusion Amendment, is required to be endorsed onto the policy. Further, "Physical Damage to Property" as defined in the policy is to be deleted and replaced by the following endorsement:

> "It is agreed that 'Physical Damage to Property' means direct and accidental loss of or damage to all property owned by any named insured and all property in any named insured's care, custody and control arising out of the acts or omissions of the contractor named on the Declarations."

The original RRP Liability Insurance Policy must be submitted to Amtrak prior to commencement of Operations.

In the alternative, and upon Amtrak's approval, Contractor may elect to have Amtrak insure the Operations under its Blanket RRP Liability Insurance Program. The premium, which shall be determined by the rate schedule promulgated by the insurer in effect as of the effective date of the Agreement, shall be prepaid by Contractor. In the event Contractor and Amtrak agree to insure the Operations under Amtrak's RRP Program, Contractor shall include the RRP premium of (*to be determined by Amtrak at the time of application for right-of-entry*) in addition to the Permit Fee, and send its check made payable to National Railroad Passenger Corporation to the individual set forth below prior to commencement of Operations.

E. ALL RISK PROPERTY INSURANCE covering physical loss or damage to all property used in the performance of the Operations. The policy shall have limits of liability adequate to cover all property of Contractor (including personal property of others in Contractor's care, custody or control) and shall include a waiver of subrogation against Amtrak, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue.

F. CONTRACTOR'S POLLUTION LIABILITY INSURANCE covering the liability of Contractor arising out of any sudden and/or non-sudden pollution or impairment of the environment, including clean-up costs and defense, that arise from the Operations of Contractor with National Railroad Passenger Corporation, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue named as additional insureds. Coverage under this policy shall have limits of liability of not less than $2 million each occurrence with no sunset clause.

G. POLLUTION LEGAL LIABILITY INSURANCE is required if any hazardous material or waste is to be transported or disposed of off of the jobsite. Contractor, its subcontractor or transporter, as well as the disposal site operator, shall maintain this insurance. Contractor shall designate the disposal site, and must provide a certificate of insurance from the disposal

facility to Amtrak. The policy shall name National Railroad Passenger Corporation, as appropriate CUSCO or WTC, and all commuter agencies and railroads that operate over the property or tracks at issue as additional insureds, with limits of liability of not less than $2 million per claim.

Further, any additional insurance coverages, permits, licenses and other forms of documentation required by the United States Department of Transportation, the Environmental Protection Agency and/or related state and local laws, rules and regulations shall be obtained by Contractor.

H. PROFESSIONAL LIABILITY INSURANCE covering the liability of Contractor for any and all errors or omissions committed by Contractor in the performance of the Operations, regardless of the type of damages. The coverage shall be maintained during the term of the Operations, and for at least three (3) years following completion thereof. The policy shall have limits of liability of not less than $10 million per claim and in the annual aggregate. The policy may contain a deductible of a maximum of two hundred fifty thousand dollars ($250,000), but in such case the deductible is the sole responsibility of Contractor, and no portion of such deductible is the responsibility of Amtrak.

Contractor may elect to satisfy this requirement through the addition of endorsement CG2279 "Incidental Professional Liability" to its CGL policy.

I. CLAIMS-MADE INSURANCE: If any liability insurance specified above shall be provided on a claims-made basis, then in addition to coverage requirements above, such policy shall provide that:

1. The retroactive date shall coincide with or precede Contractor's start of Operations (including subsequent policies purchased as renewals or replacements).

2. The policy shall allow for the reporting of circumstances or incidents that might give rise to future claims.

3. Contractor will use its best efforts to maintain similar insurance under the same terms and conditions that describe each type of policy listed above (e.g., Commercial General Liability, Professional Liability) for at least three (3) years following completion of the Operations; and

4. If insurance is terminated for any reason, Contractor will purchase an extended reporting provision of at least two (2) years to report claims arising from Operations.

Contractor shall furnish evidence of insurance as specified above at least fifteen (15) days prior to commencing Operations. THESE DOCUMENTS SHALL INCLUDE A DESCRIPTION OF THE PROJECT AND THE LOCATION ALONG THE RAILROAD RIGHT-OF-WAY (typically given by milepost designation) IN ORDER TO FACILITATE PROCESSING. The fifteen (15) day advance notice of coverage may be waived by Amtrak in situations where such waiver will benefit Amtrak, but under no circumstances will Contractor begin Operations without providing satisfactory evidence of insurance as approved by Amtrak. Such evidence of insurance coverage shall be sent to:

Director Project Initiation & Development
National Railroad Passenger Corporation
30th Street Station, Mail Box 64
Philadelphia, PA 19104-2817

Work may not proceed on Amtrak property until all insurance requirements have been met to the satisfaction of Amtrak's Director of I & C Projects or his/her duly authorized representative.

DATA REQUIRED FOR APPROVAL OF BRIDGE ERECTION, DEMOLITION OR OTHER HOISTING OPERATIONS OVER TRACKS OF THE NATIONAL RAILROAD PASSENGER CORPORATION (AMTRAK)

A. Plan view showing location(s) of cranes, operating radii, with delivery and/or disposal locations shown. Provide all necessary dimensions for locating the elements of the plan.

B. Plans and computations showing the weight of the pick.

C. Crane rating sheets, demonstrating that cranes are adequate for 150% of the calculated pick weight. That is, the cranes shall be capable of picking 150% of the load, while maintaining normal, recommended factors of safety. The adequacy of the crane for the proposed pick shall be determined by using the manufacturer's published crane rating chart and not the maximum crane capacity. Crane and boom nomenclature is to be indicated.

D. Calculations demonstrating that slings, shackles, lifting beams, etc. are adequate for 150% of the calculated pick weight.

E. Location plan showing obstructions, indicating that the proposed swing is possible. "Walking" of load using two cranes will not be permitted. Rather, multiple picks and repositioning of the crane may be permitted to get the load to the needed location for the final pick, if necessary.

F. Data sheet listing types and sizes of slings and other connecting equipment. Include copies of catalog cuts for specialized equipment. Detail attachment methods on the plans.

G. A complete procedure, indicating the order of lifts and any repositioning or re-hitching of the crane or cranes.

H. Temporary support of any components or intermediate stages, as may be required.

I. A time schedule of the various stages, as well as a schedule for the entire lifting process.

Submit five (5) sets of plans and calculations to the Assistant Chief Engineer's duly authorized representative whose name and address will be provided at the project preconstruction meeting.

REQUIREMENTS FOR TEMPORARY SHEETING AND SHORING TO SUPPORT AMTRAK TRACKS

The following items are to be included in the design and construction procedures for all permanent and temporary facilities adjacent to AMTRAK tracks.

A. Footings for all piers, columns, walls, or other facilities shall be located and designed so that any temporary sheeting and shoring for support of adjacent track or tracks during construction, will not be closer than toe of ballast slope. The dimension from gage of rail to toe of ballast, along tangent track, is 7'-5"; see dimensions on Track standard plans for curved track dimensions.

B. USE OF SHEETING: When support of track or tracks is necessary during construction of the above-mentioned facilities, interlocking steel sheeting, adequately braced and designed to carry Cooper E80 live-load plus 50 percent impact allowance is required. Soldier piles and lagging will be permitted for track support ONLY when required penetration of steel sheet piling cannot be obtained, due to site-specific conditions that make steel sheet piling placement impracticable, in the opinion of the authorized, Amtrak design review engineer.

1. For usual soil conditions and limited excavations, sheeting is required when the near- track excavation extends beneath or nearer to the track than the Theoretical Railroad Embankment Line. The Theoretical Railroad Embankment Line is defined as a line that starts at grade, ten foot from the centerline of the outer track, and extends downward, away from the track, at a slope of 1-1/2 horizontal to one vertical.

2. For special soil conditions, such as soft organic soils and rock conditions, and for unusual excavation conditions, temporary supports for excavations may be necessary even when the limits fall beyond the Theoretical Railroad Embankment Line, requiring site specific analysis by a professional, geotechnical engineer.

3. See Sketch SK-1, “ Normal Requirements for Sheet Piling Adjacent to Tracks ” .

C. Exploratory trenches, three feet deep and 15 inches wide in the form of an “ H ” , with outside dimensions matching the proposed outside dimensions of sheeting, shall be hand dug, prior to placing and driving the sheeting, in any area where railroad or utility underground installations are known or suspected. These trenches are for exploratory purposes only, and shall be backfilled and immediately compacted, in layers. This work shall be performed only in the presence of a railroad inspector.

D. Absolute use of track is required while driving sheeting adjacent to running track. Track usage shall be prearranged per standard procedures, through the Amtrak project representative.

E. Cavities adjacent to sheet piling, created by pile driving, shall be filled with sand, and any disturbed ballast shall be restored and tamped immediately.

F. Sheet piling cutoffs

1. During construction, sheeting shall be cut off at an elevation no higher than the top of tie.

2. At the completion of construction activities involving the use of sheet piling, sheet piling may be pulled if there will be no adverse impact to the railroad track support bed, as determined by the Amtrak site engineer. This will generally be permitted when both of these conditions are met:

   a. The sheeting face is at least ten feet distant from the centerline of track, and

   b. The bottom of the excavation that the sheeting supported prior to backfilling, does not fall within an assumed influence zone under the tracks. The assumed influence zone is defined as the area, as seen in cross-sectional view, falling beneath the Theoretical Underground Track Disturbance Line. This line is defined as a line that starts at the end and bottom of the ties, and extends from the track outward and downward at a one-to-one (45-degree) slope.

3. Sheet piling that is to be left in-place, shall be cut off below the ground line a. at least eighteen inches below final ground line at the sheeting, and b. no higher than 24 inches below the elevation of the bottom of the nearest ties

4. See Sketch SK-1, " Normal Requirements for Sheet Piling Adjacent to Tracks " .

G. The excavation adjacent to the track shall be covered, ramped and protected by handrails, barricades and warning lights, as required by applicable safety regulations, and as directed by Amtrak.

H. Final backfilling of excavation shall conform to project specifications.

I. The Contractor shall provide Amtrak with a detailed schedule of proposed construction operations, detailing each step of the proposed temporary construction operations in proximity to Amtrak tracks, so that Amtrak may review and approve the proposed operations, and may properly inspect and monitor operations.

J. Drawings for the proposed temporary sheeting and shoring shall be signed and sealed by a Licensed Professional Engineer. Complete design calculations, clearly referenced to the drawings, and easy to review, shall be provided with submission of drawings.

K. Where site specific conditions impose insurmountable restrictions to the design of temporary construction conforming to the limitations listed above, the design of temporary construction shall be developed in close coordination with Amtrak design review personnel. The Chief Engineer, Structures shall provide final approval of temporary construction that does not conform to the above limitations.

1. When Amtrak grants approval for sheeting closer than standard minimum clearances, the Contractor shall develop a survey plan, if not already required by the project, for the adjacent tracks, to be conducted prior to, during, and after the temporary sheeting construction operations. If settlement is detected, construction operations shall be suspended until the track has been returned to its initial condition, and stabilized, as determined by the Amtrak project site representative.

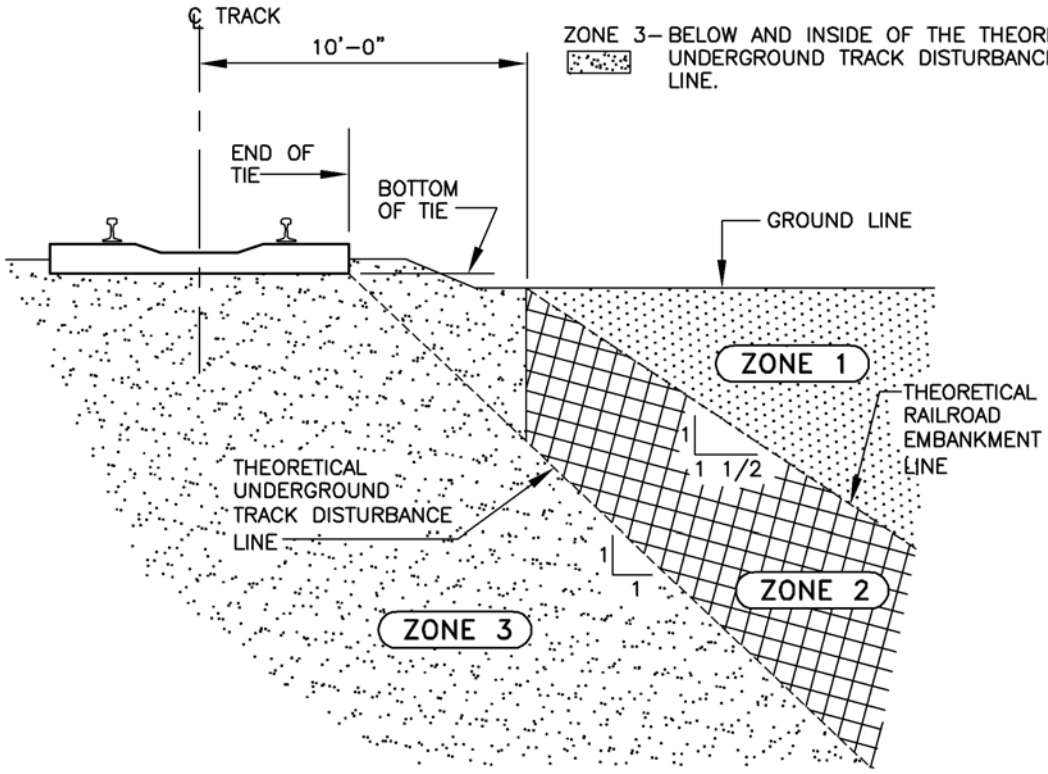
2. The Contractor shall stockpile ten (10) tons of approved ballast at the project site, and maintain that amount in ready reserve, to allow for the possible need to restore track profile.

LEGEND

ZONE 1 – ABOVE AND OUTSIDE THE THEORETICAL RAILROAD EMBANKMENT LINE.

ZONE 2 – FARTHER THAN 10 FEET FROM THE CENTERLINE OF TRACK, BELOW THE THEORETICAL RAILROAD EMBANKMENT LINE AND ABOVE THE THEORETICAL UNDERGROUND TRACK DISTURBANCE LINE.

ZONE 3 – BELOW AND INSIDE OF THE THEORETICAL UNDERGROUND TRACK DISTURBANCE LINE.



NORMAL REQUIREMENTS FOR SHEET PILING ADJACENT TO TRACK

(1) EXCAVATIONS WITHIN ZONE 1 – ABOVE AND OUTSIDE OF THE THEORETICAL RAILROAD EMBANKMENT LINE – DO NOT NORMALLY REQUIRE SHEETING TO PROTECT RAILROAD ROAD BED. SHEETING MAY BE REQUIRED FOR OTHER REASONS.

(2) EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 2 REQUIRE SHEETING, BUT THE SHEETING MAY NORMALLY BE PULLED AFTER THE EXCAVATION HAS BEEN BACKFILLED.

(3) EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 3 WILL NORMALLY REQUIRE THE SHEETING TO BE LEFT IN PLACE AND CUT–OFF PER REQUIREMENTS.

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

SKETCH 1

SPEC. 02261A – REV. 1

Designed	Drawn	Date
CJR	JLM	6/06/01

File No:	
Design No:	3501
Sheet No.	1 of 1
Dwg. No.	SK–1

L. Particular care shall be taken in the planning, design and execution of temporary construction, as relates to railroad slope protection and drainage facilities. Erosion and sediment control best management practices shall be designed and employed, as approved by Amtrak. Any unintended disruption to railroad drainage facilities, caused by the temporary construction, shall be promptly remedied, as directed by the Engineer, solely at the Contractor's cost.

M. The following Information Sketch is attached: 1. Figure No. SK-1: Normal Requirements for Sheet Piling Adjacent to Track

Submit five (5) sets of plans and calculations to the Assistant Chief Engineer's duly authorized representative whose name and address will be provided at the project preconstruction meeting.

Basis of Payment:

Payment for Maintenance of Railroad Traffic as herein required shall be paid for at the Contract Lump Sum price bid for "Maintenance of Railroad Traffic", as shown on the proposal for the Amtrak system, which price and payment shall constitute full compensation for the above requirements which include but are not limited to, all costs of maintaining railroad traffic during the life of the Contract, except Protective Services which will be paid directly to the Railroad by DelDOT; all incidental costs imposed by the Railroad on the Contractor arising from the need to meet any or all requirements outlined herein; furnishing and hauling all materials, for clean up and restoration of railroad site; obtaining and furnishing the required insurance coverage to fulfill the insurance requirements of these special provisions; and for all materials, labor, tools, equipment, appurtenance, and incidentals necessary to complete the item.

Any damage to Railroad property or facilities caused by the Contractor's operations shall be repaired by the Contractor at its own expense and to the satisfaction of the Railroad.

11/17/10

763508 - PROJECT CONTROL SYSTEM DEVELOPMENT PLAN
763509 - CPM SCHEDULE UPDATES AND/OR REVISED UPDATES

Description:

The Project Control System will be set up and maintained by the Department of Transportation to monitor and record work in progress and to coordinate and synchronize construction management functions. The Department will use Critical Path Method (CPM) scheduling to approve the Contractor's work schedule, review work progress, evaluate time extensions, identify problem areas, and recommend solutions to maintain the established work schedule. The Department will designate a Critical Path Method Administrator (CPMA) to oversee the Project Control System.

The Contractor shall designate a Critical Path Method Coordinator (CPMC) having proven experience in construction scheduling and in CPM concepts and scheduling. The CPMC shall be familiar with and have direct contact with both the Contractor's front office and field staff. The CPMC shall be knowledgeable of the status of all parts of the work throughout the length of the Contract in order to properly coordinate the Contractor's work schedule information and shall be available for consultation and preparation of documents on a daily basis. If this condition is not complied with the Contractor shall submit qualifications for a replacement CPMC to the CPMA for approval by the Engineer.

The CPMC shall submit a working drawing schedule, materials schedule, crew schedule; and shall prepare and provide the "look ahead", original, update, revised update, and final (as-built) update CPM work schedules, written CPM schedule narratives, and other CPM schedule information as required by the Project Control System Development Plan. The CPMC shall prepare and provide the Contractor's work schedule information by email as a single compressed database file in CPM format fully compatible with the WindowsÒ version of Primavera Project PlannerÒ used by the Engineer for generation of the CPM schedules.

The CPM format shall be the Precedence Diagram Method with days as the Planning Unit and shall be based on Calendar Days. Schedules will be developed using every day as a workday; schedules with calendars based in any manner on Working Days will not be allowed.

WORKING DAY CONTRACT: If the Contract Completion Date is in working days, the CPM Global Calendar shall be used as an adjustable Working Day Calendar to represent the working day Contract Time. This calendar shall be adjusted to reflect the actual working day history for each update period. Calendars provided by a format database and additional calendars representing specific work period restrictions as per the Contract Documents shall also be used. The CPM “Project must finish by” Date shall not be used.

The CPMA will receive the Contractor's CPM schedule databases for input to generate the CPM schedules. The generated CPM schedules are the Contractor's own work schedule and will be reviewed for approval by the Engineer. CPM schedules approved by the Engineer will have the word “Schedule” in the center title block (layout name) of their graphic outputs and title line of their report outputs.

The scheduling of the construction is the responsibility of the Contractor; the Contractor is responsible to determine, by adequate planning, the most feasible order of work commensurate with the Contractor's abilities and the Contract Documents.

The Contractor's compliance with the Project Control System Development Plan and CPM Schedule Updates and/or Revised Updates, and the Engineer's approval of the generated Original CPM schedule, its updates and/or revised updates will be required before processing monthly estimates for payment.

It is not the intent of this Contract that the Engineer by approving the CPM schedules agrees that it is reasonable in all respects or that the schedule, if followed, will result in timely completion of the Project. The Engineer's approval is based on a review of general conformity for compliance with the requirements of the Project Control System and on the items or time restrictions that the department and/or the Engineer have control. The Contractor is free to make assumptions regarding field conditions, estimated quantities, and/or subsurface conditions. However the Department's concurrence with the Contractor's schedule based on these assumptions does not relieve the Contractor from making necessary revisions to his schedule should his assumptions fail to hold true. No time extension to the Contract which is due to assumptions made by the Contractor and that do not hold true during construction will be considered by the Department. Discrepancies and/or changes initiated by the Department in proposed quantities or plans that cause an extension to the critical path will be considered by the CPMA. The Department's controls or time restrictions are identified hereinafter and in the Standard Specifications, Special Provisions, and on the Contract Plans as plan notes.

Development of the Project Control System (PCS):

The PCS development plan is as follows:

(a) Within seven (7) calendar days after the date of the fully executed Contract a workshop meeting will be held with the Engineer, CPMA, Contractor, and CPMC. The CPMA will profile the basics and procedures of the Project Control System and discuss schedule model design at this meeting. Attendance is mandatory,

The Department's partially predetermined Coding Structure (CS) format having a maximum of seventeen (17) code classification levels will be used and will be furnished at the Workshop Meeting. The CS is a specific listing that illustrates the hierarchy of work needed for the project. The hierarchy is categorized into levels or classifications. The CS classifications organize activities into manageable groups through each level of the project, for example; locations, phasing (staging), landmark dates, roadway sections and bridge structures; footings, columns, and caps; contractor and subcontractor.

The CPMC shall assist in determining the breakdown and code title descriptions from south to north and west to east of the location code classification. Activity code values shall be perspicuous for each classification grouping. Additional activity code classifications and values as required by the Engineer from time to time shall be provided and added to the schedule database by the CPMC. The CPMC shall not alter the CS and properly code all activities with the approved CS activity code values for all code classifications including all railroad, waterway, and outside agency activities with approved code values, including classifications as added by the Engineer. Coding enables generation of organized reports and graphics that can summarize any level of the project schedule.

When the Department provides a format database for the Contract, it shall be used by the Contractor as the basis from which to develop their schedule. The CPMC may add, but not insert, code classifications in the format database;

(b) Within fourteen (14) calendar days after the workshop meeting, the CPMC:

(1) Shall submit a working drawing schedule, using the Department's application format or other format as agreed to by the Engineer. This schedule shall also include all other items having content that requires approval to allow any portion of the work to commence or continue. This schedule shall be submitted to the CPMA for approval by the Engineer and shall contain all required working drawings and also include but not be limited to reinforcing bar lists, formwork drawings and calculations, construction procedures, borrow pit security and traffic plans, precast structures, wetland work plans, construction sequencing, load tests, and wave equation analyses. Working drawing information shall include the identification number, description, type, anticipated submittal date, time frame for preparation and review,

approval needed by date, and a resubmittal process (if expected) for each listed item. This information shall also give factory leadtime and expected delivery date, if applicable, for each listed item.

The Contractor should be aware that the Department's time frame for review of working drawings and other submittals properly submitted or resubmitted in accordance with Standard Specification Subsection 105.04 will be thirty (30) calendar days duration unless mutually agreed to by the CPMC and CPMA; this 30 day duration supercedes the time frame of the Subsection. If a working drawing or other submittal involves review by railroads, environmental agencies, other agencies, municipalities, other states, federal agencies, or the U. S. Coast Guard the time frame for review will be sixty (60) calendar days unless mutually agreed to by the CPMC and CPMA. The time frame will begin on the date of receipt of the drawings by the reviewer and will end on the date of transmittal returning the drawings to the Contractor by the Department. No drawings will be accepted for review until an initial working drawing schedule has been accepted unless agreed to by the Engineer.

The working drawing schedule shall be updated and correlated with the activities of the "look ahead" and all other CPM schedules;

(2) Shall submit a materials schedule using the Department's application format or other format as agreed to by the Engineer. This schedule shall be submitted to the CPMA for approval by the Engineer and shall contain all required materials, samples, and sources of supply. The materials schedule information shall include the identification number, description, generic or brand name, sample requirement, and manufacturer's and supplier's name, address, and phone number for each listed item. The schedule shall also give the anticipated submittal date, time frame for preparation and review, approval needed by date, factory leadtime, and expected delivery date, if applicable, for each listed item.

The materials schedule shall be updated and for materials having long factory leadtimes shall be correlated with the activities of the "look ahead" and all other CPM schedules;

(3) Shall submit a crew schedule. This schedule shall be submitted to the CPMA for approval by the Engineer and shall be accompanied by a written narrative and shall contain all crews and their work plan.

The crew schedule shall be updated and correlated with the activities of the "look ahead" and all other CPM schedules;

(4) Shall prepare and provide a written narrative of the Contractor's work plan and an acceptable "look ahead" schedule database in CPM format. This schedule database shall reflect activities for the Contractor's overall work plan for the entire project detailing the “look ahead” period and shall be submitted to the CPMA for acceptance by the Engineer. The “look ahead” period shall be as determined by the Engineer. The “look ahead” schedule shall be maintained and updated until an Original CPM schedule is approved. The “look ahead” schedule shall also reflect the Sequence of Construction in the plans unless otherwise approved by the Engineer. This “look ahead” schedule, its updates and/or revised updates shall also be incorporated into the Original CPM schedule database. Issue of the Notice to Proceed is contingent upon receipt and acceptance of this schedule in accordance with Standard Specification Subsections 108.02 and 108.03; and

(5) Shall begin meeting with the CPMA at their office every third business day to prepare and provide a written narrative of the Contractor's work plan and a CPM schedule database until a useable, logical draft of the full CPM schedule network, responsive to the project requirements and correlated with the required schedules has been developed as determined

by the Engineer. The CPMA will generate an initial CPM schedule from the CPMC's logical draft CPM schedule database for review by the Engineer. This initial schedule shall reflect the Sequence of Construction in the plans unless otherwise approved by the Engineer. This initial CPM schedule database, if acceptable, may be used to fulfill the Contractor's "look ahead" schedule requirements;

(c) If the initial CPM schedule is not acceptable to the Engineer, the CPMC shall continue to meet with the CPMA on every third business day and prepare and provide the Contractor's written narrative and CPM schedule database as necessary until a generated CPM schedule is acceptable to the Engineer; and

(d) Within twenty-eight (28) calendar days after the workshop meeting, an initial CPM schedule must be generated having the requirements for the Engineer's approval. This schedule shall reflect a clear understanding of the Contractor's work plan, be adequate to determine the Department's staffing requirements, have correct physical logic, incorporate construction and traffic phases, and display clarity of presentation for review and processing. Upon approval the CPMA will furnish the Contractor a graphic and report output of this CPM schedule. This CPM schedule, or Original CPM schedule, is the Contractor's own work schedule and the Contractor's responsibility to maintain.

The ending (cut-off) day for each monthly estimate period shall be proposed by the Contractor subject to Department approval. In the event of a conflict, the Engineer will have the authority to establish the ending day.

Processing of monthly estimates for payment will begin or continue only if the Contractor is in compliance as determined by the Engineer with the PCS Development Plan.

Any information required by the Engineer for analysis of the CPM schedules, their updates and/or revised updates; clarification of charts and other schedules; and evaluation of proposed changes or change orders shall be prepared and provided by the CPMC. A copy of the current approved CPM schedule, its updates and/or revised updates shall be on display at the field office of both the Department and the Contractor.

CPM schedule information and requirements:

The CPMC shall prepare and provide the Contractor's work schedule information in the form of work step and restraint activities:

(a) Work step activities are single step construction elements,
(b) Restraint activities are not construction elements but affect the start of other activities.

When setting forth work steps and restraints the breakdown on these activities shall address the following factors:

Work Step factors affecting the duration and/or sequence of activities;

1. Work at locations done at different times or requiring different crews,
2. Work requiring different materials,
3. Work requiring different crew or craft requirements,
4. Work requiring different equipment,
5. Work requiring different responsibility (subcontractors),
6. Structural work having distinct subdivisions,
7. Labor and equipment resource availability,
8. Work as reflected in the Contractor's estimating or accounting breakdown,
9. Work as reflected in the state's breakdown for bidding or payment,

10. Public, private, and/or Contractor utility work and limiting or outage schedules of public and/or private utility organizations, and
11. Maintenance of traffic.

Restraint factors affecting the start of other activities;

1. Preparation of working drawing and materials submittals,
2. Approval, return, and/or resubmittal of working drawings and materials,
3. Specialized material testing,
4. Long lead purchases - material and equipment availability,
5. Material and equipment fabrication time,
6. Testing of special equipment and in place testing,
7. Delivery of unusual shipment or scarce material,
8. Dependency on completion of utility work,
9. Dependency on the Department's approval of issues involving public, private, and/or other governmental agencies,
10. Dependency on completion of part or all of another Department contract or construction of other organizations, whether contiguous or not,
11. Protection and restoration of property, forest protection, special traffic controls, erosion control and water pollution, environmental controls and suspensions, safety, and foreseeable archeological and/or historical evidence delays,
12. Procurement of permits, and
13. Conditions as set forth in Standard Specification Subsection 107.01.

Activities must be identified by a name, symbol, and coding, and shall have duration, sequence, responsibility, and resources.

Activity names or titles shall be descriptive and be single identifiable work steps or restraints. A sample breakdown list of activity titles may be furnished to the Contractor by the Engineer on request. Activities shall be selected, as a minimum, on a structure by structure and/or section by section basis where relevant and have further breakdown into secondary components. Activities shall be inclusive and representative of the Contract work. Activity symbols, or ID's, shall be unique and systematic.

Activity codes shall have classifications and values. The approved CS will determine activity code classifications and values. The CPMC shall identify activities using these classifications and code values. Additional activity codes as required by the Engineer shall be provided by the CPMC.

Activity durations, or Original Durations, shall be reasonable and representative of the scope of the activity. If durations are considered excessive or insufficient, the industry standard will be used. Original Durations may not exceed thirty (30) calendar days unless approved by the Engineer. Durations of activities shall be determined by using productivity rates based on calendar days, not work days. Original Durations of activities may not be less than two (2) calendar days unless agreed to by the CPMA. The use of calendar day productivity rates in CPM scheduling allows for customary days during the work week that the Contractor does not work and for normal weather delays. Productivity rates used to establish durations shall reflect the time periods when work can be scheduled and exclude the non-work period of the activity's calendar. Activity calendars allow activities to be scheduled only when allowed by the nature of or restraints on the work. Calendars shall not exclude weekends, holidays, or other times the Contractor does not work.

All activities shall be identified by entry of their appropriate Calendar. A minimum of fourteen (14) shall be used and the first fourteen (14) shall be ordered and entitled as follows: 1) Full schedule, 2) Environmental, 3) Winter Condition, 4) Concrete Work, 5) Concrete Work Winter, 6) Concrete Deck, 7) Concrete Paving, 8) GABC, 9) Asphalt Base, 10) Asphalt Surface, 11) SMA, 12) Night Paving Asphalt Base, 13) Night Paving Asphalt Surface, 14) Night Paving SMA. Calendar non-work periods shall reflect the average Delaware weather history of and the environmental regulations for the location of the Contract work.

The Contractor may perform work during its calendar non-work period when favorable weather allows the work to be performed without compromising its specification and at no cost to the Department. When the Department provides a format database from which to develop the CPM schedule, the Contractor shall not modify the Calendars in the format database unless approved by the Engineer. The non-work periods of the calendars follow:

CALENDAR	NON-WORK PERIOD
1) Full schedule,	N/A
2) Environmental:	Varies: project specific,
3) Winter Condition:	December 1 thru March 15,
4) Concrete Work	December 1 thru March 15,
5) Concrete Work Winter:	N/A (Protection provided at no cost to the Department)
6) Concrete Deck:	November 15 thru March 31,
7) Concrete Paving:	December 1 thru March 15,
8) GABC:	November 15 thru March 15,
9) Asphalt Base:	November 15 thru March 15,
10) Asphalt Surface:	November 15 thru March 15,
11) SMA:	November 15 thru March 31,
12) Night Paving Asphalt Base:	October 15 thru April 30,
13) Night Paving Asphalt Surface:	October 15 thru April 30, and
14) Night Paving SMA:	October 15 thru April 30.

Activity durations are based on Calendar Days and shall reflect all time necessary to complete an activities work and its requisites. The Contractor shall include in their original schedule narrative their work day to calendar day conversion factors with a discussion of how these factors were determined. When scheduling using multiple resources each resource unit shall have a corresponding activity. All time to complete the activity shall include as a minimum all Contractor unscheduled work days, all Contractor holidays, and allowance for normal weather delays, except for software generated calendars. Inclement weather and failure of a contractor and their subcontractors to provide sufficient resources are not means to recover costs or time due to delay.

Activity sequence shall be typical of proficient scheduling practice. The sequence must be logical and representative of the Contractor's order of the work. Successors and predecessors determine the job logic or activity sequence. Successors are activities that follow an activity. Predecessors are activities that precede an activity. A given activity cannot start until all predecessors have been completed. The Precedence Diagram Method (PDM) shall be used. The PDM places the activities on nodes and the dependencies between them are defined by arrows. Only finish to start dependency relationships (links) shall be used; lag times may not be used unless approved by the CPMA. The Department reserves the right to request a resequencing of activities to effect competent scheduling practice and realistic job logic.

Activities shall be sequenced to reflect resource apportionment. When one crew (resource) is being utilized to perform all of many similar activities, these activities must be linked together in some sequence to reflect that one crew is performing the work. Additionally, when several crews are performing similar activities, these activities must have separate linked sequences equal to the number of crews performing the work. Activities shall be logically connected and coded to reflect the crew (resource) performing the operation. A summary list of crews, their crew codes, and their operation(s) shall be included with each schedule submission unless unchanged. Resource loading will not be required unless otherwise directed by the Engineer. If resource loading is directed, payment will be incidental to the Item “763509 – CPM Schedule Updates and/or Revised Updates”.

Activity responsibility shall be identified for each activity except those performed by the Contractor, if requested by the Engineer. Subcontractors, DBE's, utilities, performers of other contracts, and performers

of adjoining work on other advertised contracts shall be identified by coding when responsibility for an activity is requested.

Activity resource loading shall be required only if the Contractor demonstrates the inability to maintain the CPM schedule. In this event, the Engineer shall have the authority to require resource information for all activities affecting project completion. Resource information includes manpower, equipment, materials, and/or services and has cost and has a range and amount of availability. Lack of sufficient resources will not be considered cause to extend durations when preparing the CPM schedule. By bidding to contract the work, the Contractor has ensured that sufficient resources are available or will be available in a suitable time frame to perform the work within the Contract Time, even if a resequencing of activities requires an activity or activities to shorten their Remaining Duration. In the event the Contractor demonstrates the inability to maintain the CPM schedule, the Engineer may require the Contractor to increase the number of shifts, begin overtime operations, work extra days including weekends and holidays, supplement construction plant and equipment, or all or any of the foregoing as a step to improve the Contractor's work progress all without additional cost to the Department.

Work activities shall as a minimum be representative of all construction work for each operation, each phase (stage), and each location.

Working drawings shall be included as activities. Preparation and leadtime (order, manufacture, and delivery time), shall be included as activities for each applicable working drawing item. A separate activity shall be used to begin the submittals of working drawings. Time extension(s) will not be considered when submittal activity(s) affects the critical path except for owner caused delay as recognized by the Engineer. If working drawings require resubmittal(s), activities for their preparation and activities for their approval (having the Department's review time) shall be included in the next CPM schedule update database. Time extension will not be considered when resubmittal activity(s) affects the critical path except for owner caused delay as recognized by the Engineer. Working drawing activities and leadtime activities not requiring submittal shall not be on the critical path of the Original CPM schedule.

Materials having long leadtime and/or manufacture time or that are difficult to acquire and/or fabricate shall have materials approval and leadtime activities included in the schedule for each applicable material item. A separate activity shall be used to begin the submittal of these materials. These material approval and leadtime activities shall not be on the critical path of the Original CPM schedule.

Administrative milestones shall be included as activities. Each milestone of the bidding through first chargeable day process shall be an activity.

Utility work shall be included as activities and shall be identified accordingly. Each utility item on the plans or listed in the Contract's Utility Statement shall be an activity. The activity description shall indicate the utility company and include the number of each listed item or be numbered according to the item's order in the Utility Statement. A separate activity shall be used to begin utility work. Utility activities shall not be impactive on the Original CPM schedule unless authorized by the Engineer.

Agency agreements and/or arrangements and other submittals for approval shall be included as activities. A separate activity shall be used to begin the agency items and other submittals for approval.

The effect of other Department contracts or construction of other organizations on the completion of part or all of this Contract shall be included as activities. A separate activity shall be used to begin these items.

Phasing (staging) shall be included as activities. These activities shall be correlated with the sequence or suggested sequence of construction on the plans and/or in the specifications. A separate start and finish milestone activity shall be used to start and to complete each phase.

When multiple crews are performing an operation or a string of operations, each crew shall be logical connected and coded to reflect the crew performing the operation.

Surcharge durations and special testing, if applicable, shall also be included as activities. Sufficient duration times for these activities will be allowed as per the plans and specifications or as agreed to by the Engineer.

Activity types must be either “task”, “start milestone”, or finish milestone. “Hammock” type activities may be allowed as agreed to by the Engineer. If the Department requires resource loading, “task” activities may be converted to “independent” type as agreed to by the Engineer.

Date constraints, float and duration constraints, and/or flags for activities will not be allowed. Milestones that do not constrain the schedule shall be allowed as agreed to by the Engineer when unique or unusual events cause a restraint to the Contractor's work schedule. The use of "Start No Earlier Than" (SNET) and “Zero Free Float” (ZFF) constraints for activities may be allowed for the purpose of schedule clarity or definitude if acceptable to the CPMA.

Total Float is defined as the difference between the current schedule finish date and the Contract Completion Date that is entered by constraint ("Project must finish by:" date) in the schedule.

Free float is defined as the amount of time between when an activity "can finish" (the early finish) and when an activity "must finish" (the late finish). Free float is float shared with all other activities and is defined as the amount of time an activity can be delayed without affecting the critical path of the schedule. It shall be understood by the Contractor and the Department that free float is a shared commodity, not for the exclusive use or financial benefit of either party. Either party has the full use of the free float until it is depleted.

The critical path is defined as the series of activities in a CPM schedule network that has the longest path in time. The submitted activity sequence and durations must generate a CPM schedule having only one (1) critical path; a schedule with multiple or near multiple critical paths will not be allowed. Work like project wide Maintenance of Traffic, Construction Engineering, or Temporary Erosion Control that by their nature are ongoing for long durations or the duration of the project and are basically complementary to other activities, shall be divided and condensed into "establish" and "conclude" activities to prevent this type of work from being the major portion of the critical path or its entirety.

The Project Start Date, or initial Data Date, of the Original CPM schedule shall be the first chargeable day of work. The first schedule activity related to productive work shall be entitled "First Chargeable Day" and shall be a start milestone. Nonproductive work and administrative activities may begin and/or end prior to the Project Start Date and shall be statused as such in the Original CPM Schedule. The submitted activity sequence and durations must generate an Original CPM schedule using all the Contract Time and a critical path having zero total float. An early completion schedule will not be allowed. The Contractor's original schedule shall reflect the use of the entire Contract Time. The schedule ending date that uses all the Contract Time in the Original CPM schedule will be the original Contract Completion Date. This Contract Completion Date shall be fixed (Project must finish by:) in the Original CPM schedule and shall remain unchanged unless a time extension is awarded.

The Contractor's Original CPM schedule shall allocate the work over the entire Contract Time. The Contractor shall not anticipate early completion in bid preparation and shall distribute all time-driven and/or time-dependent costs uniformly over every day of the Contract Time when preparing the bid. No early completion schedules will be accepted.

After the Original CPM schedule utilizing all the allocated Contract Time has been approved, job conditions or logic changes may occur which require revision to the schedule. Only an update may be revised. These revised updates must be reflective of the Contractor's actual intent in constructing the project.

The revision may cause the project completion date to be earlier than the completion date of the current approved schedule. This is acceptable to the Department; but no claims will be considered for time-driven and/or time-dependent costs (such as delay and/or extended overhead expense) which are a result of not meeting this new project "early finish" date. Consideration for these costs would occur only for approved extensions that force actual project completion past the originally advertised Contract Time including authorized time extension(s). However, no credits for non-expended overhead will be requested should a Contractor successfully achieve completion of the project prior to the use of all the Contract Time.

If the project is delayed, the contractor must demonstrate the inability to perform other critical or near critical work to receive consideration for an extension of Contract Time.

CPM schedule databases shall be calculated using the relevant Data Date prior to submittal to the CPMA. The Data Date of CPM schedule updates and revised updates shall be the next day after the end of the update period. Schedule calculations of CPM databases shall be based on retained logic, contiguous durations, and total float as finish float.

Activity Log (memo) information is allowed, but must be factual; shall be removed, if redundant; and shall not be masked, but indicated for printing to output reports. Punctuation is not required for activity and Activity Log information unless necessary for clarity.

Statusing or contract progress of activities for updates is the entering of Actual Start dates, Suspend Date(s), Resume Date(s), Actual Finish dates, and changes in Remaining Durations to the database. An activity's Original Duration may not be changed. An activity that begins (has an Actual Start Date) must have its Remaining Duration reduced by at least 1 day.

Activity Suspend and/or Resume Dates shall be added to the activity record and the factual reasons for the cause shall be added to the respective activity Log. If an activity is suspended again it shall be curtailed and assigned an Actual Finish Date equal to the latest suspension date, and a new activity (portion 2) comprising the balance of remaining duration shall be created and inserted in succession; both activities shall indicate by log comment the facts causing this condition.

Log statusing shall be used when an activity has out-of-sequence progress and no Actual Finish Date. Out-of-sequence progress occurs when any previous predecessor of an activity has no Actual Finish date. Log statusing is the entering of the Actual Start date to the Activity Log of the database in the Departments format. These entries are not to be masked, but indicated for printing to output reports. Changes in Remaining Durations shall be entered to the database but not the Activity Log. When progress is no longer out-of-sequence or all previous predecessors of the activity have Actual Finish dates, the activity's Actual Start shall be taken out of log status and entered to the database. Log statusing provides schedule output that prevents graphic distortion of schedule activities and preserves the design sequence of the CPM schedule plan. The Engineer shall have the authority to require a revision of the CPM schedule because of out-of-sequence progress. A suspended activity that requires log statusing shall be treated in the same manner as though it was suspended again.

Each original, update, and revised update schedule database and subsequent draft submitted for approval shall have a unique and manifest Project Name and shall be uniquely identified by entry (Number/Version) in the schedule database.

Corrections are defined as entries to the database that rectify coding and activity identification errors. Corrections shall be identified by written narrative and/or as agreed to by the CPMA. Exception(s) taken in PCS or other Department correspondence shall be complied with in the subsequent update and/or a revised update of the CPM schedule.

Written narratives shall be included with each submission of initial or revised update databases. The narratives must conceptualize work plans, modifications, and/or corrections but may be summary unless

otherwise directed by the Engineer. These narratives shall describe where and the crews and order of what is to be done; narratives that are a listing of the work will not be acceptable. The Department will only accept schedule databases that reflect the work plans, modifications, and/or corrections reflected by their respective written narratives.

Inaccurate and/or faulty databases of any CPM schedule update and/or revised update will be unacceptable and shall be summarily corrected and resubmitted. Resubmittals shall be labeled "2nd Draft", "3rd Draft", etc. as appropriate and identified by entry (Number/Version) in the schedule database.

Any activity(s) or activity information that is necessary to generate a CPM schedule acceptable to the Engineer and/or schedule information that is requested by the Engineer shall be prepared and provided by the CPMC.

The CPMA will generate the CPM schedule network reflecting the Contractor's scheduling information. Upon approval of the Original CPM schedule and subsequent CPM schedule updates and/or revised updates, the CPMA will furnish the Contractor graphic and report outputs of these schedules. These CPM schedules are the Contractor's own work schedule and the Contractor's responsibility to maintain.

Monthly CPM Schedule Updates:

The CPMC shall meet with the Contractor and Resident Engineer and prepare the required work schedule progress information (status reports) to update the CPM schedule. This information shall be submitted on status forms provided by the Department that are generated from the Original Schedule and thereafter from the previous CPM schedule update or revised update(s). This update information shall reflect the current state of completed project work. The update information shall include all activities on which work was performed and/or there was progress during the update period and shall include as a minimum their actual start dates, suspend dates, and resume dates; and the estimated remaining durations or actual finish dates. The update information shall be as agreed to and signed-off and dated by the Resident Engineer and the CPMC. The CPMC shall use the signed-off and dated information to status and/or log status the update database.

The Contractor shall submit the CPM schedule database update and a copy of the signed off update information within five (5) calendar days after the end of each monthly update period. The database and signed off information must match. The CPMA will generate a CPM schedule update reflecting the Contractor's update information. The five (5) calendar day submittal period will enable the Department to discuss current schedule information at the monthly progress meeting held the following week.

If the critical path of the generated CPM schedule update has less than minus ten (-10) calendar days of total float the CPM schedule update shall be revised.

Upon approval of the CPM schedule update, the CPMA will furnish the Contractor a graphic and report output of this update. This CPM schedule update is the Contractor's own updated work schedule and the Contractor's responsibility to maintain.

CPM Schedule Revised Updates:

The CPM schedule shall be revised if the critical path has less than minus ten (-10) calendar days of total float, conditions require the Contractor to modify the work schedule, the Contractor chooses to make a significant change in the sequence of work, or the Department requests the schedule to reflect the current state of the work and/or the Contractor's acknowledged work plans. The revised update shall reflect the Contractor's current order of work and include new and/or previous activities affected by the change and shall include a written narrative of these changes. Revision as required by this Specification or as requested by the Department does not constitute acceleration unless agreed to by the Engineer. Revisions shall be identified as the revised update of the current approved CPM schedule update. Revisions are to be singular in modification and not lumped together in the same revised update unless otherwise directed by the Engineer.

Additional revision(s) of the same update is therefore acceptable. The Department reserves the right to request a resequencing of activities to effect a completion date within the Project Time.

The CPMC shall meet as needed with the CPMA at the Engineer's office within five (5) calendar days after revision is required, formal request for a revision, or the Contractor announces intent to submit a revision. The purpose of the meetings shall be to prepare the Contractor's revised update CPM schedule database and its written narrative of changes. These meetings shall continue until a useable, logical draft of the revised update CPM schedule network, responsive to the modification requirements, has been developed that will generate a workable, CPM schedule revised update having a completion date using or within the Contract Time or that allowable by this specification. The submitted CPM schedule database revised update must reflect its written narrative. Revised updates inconsistent with their written narratives will not be acceptable. The CPMA will generate the CPM schedule revised update reflecting the Contractor's new information. The reports generated by the CPM schedule revised update shall be used to prepare the update information for the next CPM schedule update.

Reduction of activity durations will not be considered acceptable criteria for revision to bring the project back on schedule unless activity quantities have been reduced or the Contractor provides a narrative describing how their means and methods to construct the work shall change and/or their resource allocation to perform the work shall increase.

For activities using like resources, modification of activity relationships to be concurrent (run parallel) with each other will not be considered acceptable criteria for revision to bring the project back on schedule unless the Contractor provides a narrative describing how their crews and/or resource allocation to perform the work shall increase.

A CPM revised update having the requirements for the Engineer's approval must be completed before preparation of the next CPM schedule update. Processing of the next monthly estimate for payment will begin only after the Engineer's approval of the signed CPM schedule revised update.

Upon approval of the CPM schedule revised update, the CPMA will furnish the Contractor a graphic and report output of this revised update. This CPM schedule revision is the Contractor's own revised work schedule and the Contractor's responsibility to maintain.

In the event that the Contractor fails to maintain his CPM schedule in a satisfactory manner, the Engineer reserves the right to enforce the provisions as set forth in Standard Specification Subsection 108.10.

Change Orders and adjustment of completion time:

A Change Order will only be considered for extension of Contract Time when the modified critical path shows requirement of additional time because of the added activity or activities and\or there is justifiable delay as recognized and determined by the Engineer. For any change order that affects the schedule, the Department reserves the right to request a resequencing of activities to effect a completion date within the Project Time.

If the CPM schedule has been updated and/or revised and positive total float has been created, no additional time will be given for added activity(s) unless the modified critical path shows requirement of additional time and/or there is justifiable delay as recognized and determined by the Engineer. Compensation for additional overhead costs will not be considered until all of the original Contract Time has been utilized. The Engineer reserves the right to "bank" (postpone the award of) approved time extensions if the project is ahead of schedule.

If a change order represents issues for which the effect on contract time can be readily determined, then any time adjustment will be agreed upon by the CPMC and CPMA prior to final execution of the change

order. Determination of time adjustment will be based on the effect of the issue on the CPM schedule, the current approved CPM schedule update or approved CPM revised update, and the Department's Time Evaluation Worksheet (TEW) submitted by the Contractor.

However, if the issues represented by the change order require further analysis and review in order to accurately and fairly evaluate the effect on contract time, then the change order contract time assessment block may be marked "not considered at this time". This will be done in order to not delay payment to the contractor for completed work included on a particular change order while the time analysis is being performed. In these cases, final resolution of any time related issues would be made as soon as all required information is received and analyzed by the Department and the Contractor.

After signature by all parties, the change order is considered approved, and work activities and any time modifications as shown on the approved TEW that affect the CPM schedule shall be reflected in the next CPM schedule update or revised update and be documented by written narrative. Only activities on the approved TEW may be included as activity(s) in schedule databases. Updates reflecting change order(s) that are inconsistent with their change order narratives will not be acceptable. No change orders will be processed until their effect on the CPM schedule has been determined, unless otherwise approved by the Engineer. A change order may not be included in a monthly estimate for payment unless approved by the Department on or before the cutoff date of the estimate. All official time extensions will be granted by letters from the applicable District Construction Engineer or his/her designated representative.

Issues involving potential time extensions must be addressed in the CPM schedule update period in which they occur or they cannot be considered. If the Contractor proposes a change to the Contract work, any time the Contractor spends in discussion and preparation, and any time the Department requires for review in the approval or disapproval process for this proposed change to the Contract work will not be considered for granting of additional contract time. It is the obligation of the Contractor to complete the project on time according to the original contract documents including current approved changes notwithstanding any change submitted for approval that may or not be accepted. The Contractor is obligated to prosecute the work at any time according to the Contract Documents in covenant at that time.

If an allowance for weather days has been included in the Completion Date section at the beginning of the Contract Special Provisions, these days shall be identified as Contract Weather Days. The following definitions regarding weather days will be utilized:

Weather day – Any Calendar Day (including weekends and Holidays) on which a weather event prohibits contract work on critical path activities. Events include, but are not limited to rain, snow, or extreme temperatures.

Lost day – Any Calendar Day (including weekends and Holidays) on which residual effects from a weather event prohibit contract work on critical path activities. Examples include, but are not limited to, wet conditions from a previous rain event, snow cover, or frozen ground.

Extensions of Contact Time for weather will not be considered until the total of weather days and lost days as defined above exceed the number of Contract Weather Days as listed in the Completion Date section at the beginning of the Contract Special Provisions. The Contractor and the Department will record and agree on weather days and lost days. A day will be considered a weather or lost day if it prevents progress of the current or next work activity on the critical path of the schedule, unless it occurs during a calendar non-work period of the current or next work activity on the critical path of the schedule in which case the day will not be counted as a weather day. Weekends and holidays will also be excluded from consideration for weather and lost days during calendar non-work periods.

When the total of weather days and lost days recorded in the field exceed the advertised Contract Weather Days, the Contractor will be awarded a day for each day weather or conditions due to previous weather events prevent progress of the current or next work activity on the critical path of the schedule.

When weather affects an activity not on the critical path and the activity becomes the critical path, the allowable days of time extension will be only for the days the activity was on the critical path. The Contractor and the Department will record and agree on these weather days. Inability to prosecute work not shown as activities in progress on the most recent CPM schedule will not be considered when determining an extension of Contract Time. The Engineer will have the final decision as to the number of calendar days the Contractor's work was limited to because of weather.

Final (As Built) CPM Schedule Update:

The CPMC shall meet with the Contractor and Resident Engineer and prepare the required as-built work schedule information and corrective work schedule information to finalize the CPM schedule. The progress reports generated by the previous CPM schedule update or revised update will be used to prepare this update information. This final update information shall reflect the final state of the project work. The final update information shall include all activities on which work was performed and/or corrections since the last update period and shall include as a minimum the activity ID and title, the actual start and finish dates, and the actual completion date. The final update information shall also include any revisions and change orders not previously included in the CPM schedule. These correction, revision, and change order modifications shall be reflected by a final update written narrative. The final update information will be as agreed to and signed off by the Resident Engineer and the CPMC. The CPMC will use the signed off information to status the CPM schedule database to prepare the final update schedule.

The Contractor shall submit the final CPM schedule database and a copy of the signed off final update information within five (5) calendar days after formal request for this update. The database and signed off information must match. The CPMA will generate a final CPM schedule update reflecting the Contractor's new information. Upon approval of the final CPM schedule update, the CPMA will furnish the Contractor graphic and report outputs of this final update.

The CPMC shall submit two (2) signed copies of the final CPM schedule update to the CPMA. Processing of the final estimate for payment will begin only after these signed copies are received. This final (as built) CPM schedule is the Contractor's final work schedule.

Method of Measurement:

The Project Control System will be portioned into two (2) items. The item, "Project Control System Development Plan", will be bid price lump sum. The item, "CPM Schedule Updates and/or Revised Updates", will be unit bid price per each approved update.

Basis of Payment:

The item, "763508 - Project Control System Development Plan", will be paid for at the Contract lump sum bid price, on the next monthly estimate after completion of the requirements of the Project Control System Development Plan, which includes approval of the Original CPM schedule.

The item, "763509 - CPM Schedule Updates and/or Revised Updates", will be paid for at the Contract unit bid price per each approved CPM schedule update. Revised updates are incidental to this item, except that each revised update(s) requested by the Department for purposes of incorporating Plan Revisions will be paid as one (1) approved CPM schedule update.

12/15/10

763522 - COAST GUARD SPECIFIC CONDITIONS

Description:

This work includes all coordination, preparation of permits and plans, and other requirements imposed by the Coast Guard for work on or near Little Mill Creek, a tributary of the Christina River, as part of this construction.

Materials and Construction Methods:

Under this item the contractor will be required to:

1. Prepare and submit for approval, three copies of plans and schedules for his operations within the waterway, for submission to:

   Commander (AOWB)
   5th Coast Guard District
   431 Crawford Street
   Portsmouth, VA 23704
   Attention: Mr. Wavery Gregory
   telephone: 757-398-6222.

   Provide copies to the Engineer for his records. The Contractor shall comply with all provisions of the Inland Rules of the Road. The Contractor shall give written notice to the Coast Guard of any planned temporary obstruction to the waterway navigation as well as copies of the plan and schedule of operations at least 30 days in advance of commencement of the work.

2. Coordinate any partial or complete navigation channel obstruction or closure, including hydraulic excavation and removal of portions of the bridge, by submitting, at least 30 days in advance of channel obstruction, one copy of plans and schedules for his operations within the waterway to:

   U.S. Coast Guard
   Sector Delaware Bay
   Waterways Management Branch
   1 Washington Avenue,
   Philadelphia, PA 19147
   Attention: Lt. Corrina Ott, Chief
   telephone: 215-271-4902
   Corrina.Ott@uscg.mil

3. Prepare and furnish three copies of as-built plans of the navigation clearance for submission to the Department. The as-built plans shall indicate the minimum navigable height under the structures above Mean High Water, channel width between piers and water depths under the structure. The as-built plans shall be signed by a surveyor licensed in the State of Delaware. The as-built plans shall be submitted within 30 days following completion of the work.

   The plan and schedule of operations within the waterway shall include:

   (a) A sketch of the waterway indicating:

   (1) Locations of all restrictions that will be placed in the waterway, such as barges, anchors and anchor lines, pilings, turbidity curtains, etc..

(2) The location and height above high mean water of any scaffolding or netting.

(b) A projected set of dates and length of time each operation will take, hours of each operation and whether or not the equipment will be removed at night.

4. Give immediate notice to the Coast Guard and to the Department, of any material, machinery or equipment lost, dumped, thrown overboard, sunk or misplaced during the progress of the work. The Contractor must remove the object with utmost dispatch. Until removal can be affected, the object or objects shall be properly marked in order to protect navigation. Notices to the Coast Guard and to the Department shall give a description and location of any such object and the action taken or being taken to protect navigation.

5. Furnish and install temporary obstruction lights as may be required by his operation and his permanent construction under this contract. Each temporary light shall consist of battery or power operated slow flashing amber light less than 60 flashes per minutes and visible for a range of 4 nautical miles on 90% of the nights of the year. Generally a lamp of 20 candle power will meet these requirements. If necessary to obtain the coverage required, a light or lights on the upstream and downstream sides shall be installed. Bridge piers shall be so marked until the construction has been completed and permanent navigational lights have been installed and determined to be operating satisfactorily. Four copies of Plans showing the proposed temporary lights during construction shall be submitted to the Department for approval before work is commenced. Deviations from the prescribed temporary lights during periods of construction will be permitted only upon written Coast Guard approval.

In the event the Contractor fails to comply with these foregoing requirements and the Federal Government is required to take action in this matter for the protection of navigation, the Department reserves the right to recover costs for such work from the Contractor.

The Federal Government and the Department assume no responsibility for any damage sustained or caused by the Contractor's plant, equipment or barges being anchored or moored at the aforementioned location and approval by either agency shall not act as a waiver of liability for any damage that may result from the Contractor's operation.

The Contractor shall maintain the temporary obstruction lights on permanent construction until permanent navigational lights have been installed and made operable in accordance with the Coast Guard requirements.

Method of Measurement:

This item will not be measured

Basis of Payment:

Payment for submittals, equipment, and coordination, as herein required, shall be paid for at the Contract Lump Sum price bid for "Coast Guard Specific Conditions", which price and payment shall constitute full compensation for the above requirements which include but are not limited to, all work and the Contractor's costs in every respect for compliance with the specific conditions imposed by the Coast Guard Commandant, together with the maintenance and removal of the temporary obstruction lights, and all else in connection therewith and incidental thereto which is not provided for under any stipulated pay item, during the life of the Contract; and for all materials, labor, tools, equipment, appurtenance, and incidentals necessary to complete the item.

763623 - NETTING, MIGRATORY BIRD EXCLUSION

Description:

This item shall consist of the installation, maintenance, and removal of a barrier that will prevent the nesting of migratory birds (swallows) on the four (4) railroad bridges over Little Mill Creek. The barrier shall be installed to completely encapsulate the sides and understructure of the bridges up to the concrete road without holes or sagging, prohibiting access to the girders upon which migratory birds typically nest.

Materials:

Netting: The netting shall consist of a durable polypropylene mesh of any color. The mesh size shall be no larger than 3/4" by 3/4" square. Items commonly sold as "bird/aquatic cage or trap netting" typically meet these specifications. Netting type and mesh size shall be approved by the Engineer prior to installation.

Netting attachment materials: Materials used to attach netting shall be appropriate for the type of netting used and as approved by the Engineer. Solvent based sealer/adhesive shall not be used on any of the netting, because it can melt the netting on contact. Materials to support and repair the netting shall also be appropriate for the type of netting used and as approved by the Engineer.

Construction Methods:

General: The migratory bird exclusion barrier shall consist of netting that is taut against the underside and sides of the bridge, with no holes or openings. To prevent damage to the netting, the netting shall not drape into the tidal waters of the Christina River. After installation, there shall be no area under or on the sides of the bridge accessible to migratory birds and available for migratory bird nesting.

Netting and Netting Attachments: Netting shall be installed using methods that are appropriate for the netting. The use of overhead supports, support cables, netting frames, or any other method as approved by the engineer may be used to attach the netting. When measuring the netting, a minimum of 6 extra inches shall be added to each side to allow for overlap. The netting shall be attached such that it shall run no more than 50 feet in any direction without support, 25 feet is preferred. Stable pipes, beams, and trusses shall be used to support netting where safe and appropriate. Support cables shall be used when there is minimal overhead support. Other methods shall be used as approved by the Engineer.

Construction planning: The migratory bird nesting season begins on April 15 and ends on August 1. During any year construction may occur, all components of the migratory bird exclusion netting, shall be installed prior to April 15 the start of the nesting season. The netting and netting materials shall remain in place and in good working order until the end of the nesting season, or until there is continuous construction on the bridge as per the Engineer. Bridge deck work and barrier removed shall be considered continuous work. The netting shall be removed and properly disposed of after August 1 or once continuous construction begins as stated above.

Maintenance: The Contractor shall inspect the netting on a weekly basis. The Contractor shall maintain the migratory bird exclusion netting in good working order with out holes or loose areas, making repairs as necessary or as directed by the Engineer. The Contractor shall repair the netting using appropriate repair materials as specified in this item.

Method of Measurement:

The quantity of netting and netting attachment hardware will not be measured. The unit will include all necessary materials, fittings, accessories required per this specification, installation, inspection, maintenance and disposal of material fitting, accessories required per this specification.

Basis of Payment:

The migratory bird netting will be paid for at the Contract lump sum. Price and payment will constitute full compensation for furnishing and installing all materials; maintenance and repair of the netting; and the removal and subsequent disposal of all materials.

This item is a contingency item and the Department reserves the right to delete from the Contract. The Contractor shall make no claims for additional compensation because of deletion of the item.

11/17/10

763624 - SCOUR PROTECTION

Description:

The work covered by this Section consists of furnishing labor, material, and equipment and performing the operations required for furnishing, testing, hauling, excavating, disposal, and placing all materials defined herein and on the Contract Drawings for the scour protection in Little Mill Creek at the railroad bridges and Retaining Wall # 1.

As shown on the plans, the scour protection shall consist of geotextile, articulating precast concrete revetment mats, grout filled geotextile bags, R-5 riprap, R-7 riprap, # 57 Stone, and sand backfill, and all other miscellaneous or incidental materials required to complete the construction of the scour protection in accordance with these specifications and the Contract Drawings.

The Contractor shall note the limited vertical and horizontal clearances available for this construction and the tidal influences at this site. As shown on the scour protection construction staging plans, the existing streambed will be removed using hydraulic excavation methods. The materials removed will be pumped into dewatering bags for drying and disposal. Refer to Appendix C "Soil Sample Analytical Results - Environmental and Waste Characterization" for expected characteristics of the excavated materials.

Placement of the articulating precast concrete revetment mats may be accomplished by suspending them from pontoons at low tide and using piles placed beyond the limits of construction to guide the articulating precast concrete revetment mats into place with winches. The actual methods employed shall be designed by the contractor

The contractor shall also coordinate with United Water Delaware regarding the exact location and depth of the existing 10 inch water line located under the proposed scour protection.
The following References are publications that form a part of this Section:

ASTM D 123	(1993a) Standard Terminology Relating to Textiles
ASTM D 422-63 (2002)	Test Methods for Particle-Size Analysis of Soils
ASTM D 2487-00	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 3786-01	Hydraulic Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Test Method
ASTM D 3884-01 (E01)	Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)
ASTM D 4354-99	Standard Practice of Sampling of Geosynthetics for Testing
ASTM D 4355-02	Deterioration of Geotextile from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 44991-99a	Water Permeability of Geotextiles by Permitivity
ASTM D 4533-91	(1996) Trapezoid tearing Strength of Geotextiles
ASTM D 4595-86	(2001) Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Method
ASTM D 4632-91	(2003) Grab Breaking Load and Elongation of Geotextiles

ASTM D 4751-99a	Determining Apparent Opening Size of a Geotextile
ASTM D 4759-02	Determining Specification Performance of Geosynthetics
ASTM D 4833-00E1	Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873-02	Identification, Storage, and Handling of Geotextiles
ASTM D 4884-96	(2003) Strength of Sewn or Thermally Bonded Seams of Geotextiles

Contractor Qualifications:

The Contractor installing the scour protection shall have satisfactorily completed geotextile bag and dewatering bag installation of similar scope and magnitude to this Contract and shall submit documentation indicating this experience to the Engineer a minimum of 60 days prior to the scheduled scour protection construction.

Pre-Construction Submittals:

Manufacturers' data for geotextile, articulating precast concrete revetment mats, grout filled geotextile bags, R-5 riprap, R-7 riprap, # 57 Stone, and sand backfill shall be submitted by the installation contractor a minimum of 60 days prior to scheduled delivery of the items for review by the Engineer. The information provided shall attest that the items meet the gradation, chemical, physical, and manufacturing requirements in these specifications. Submission shall include a sample of geotextile, grout filled geotextile bags, and sand backfill. The samples shall measure a minimum of 12 inches by 12 inches or 5 pounds.

Products Certificates: A written certificate of compliance from the material suppliers shall be submitted upon delivery of geotextile, articulating precast concrete revetment mats, and grout filled geotextile bags. The certificate shall state that the products shipped to the site meet or exceed the minimum requirements of these specifications.

Work Plan: The Contractor shall submit a Work Plan for approval a minimum of 60 days prior to the start of work. The Work Plan shall incorporate the requirements specified herein with respect to the scour protection and associated components. The work plan shall also include geometry, orientation, installation, positioning, placement, and filling procedures. Fabrication details or installation techniques that differ from those specified herein shall be documented in the Work Plan and submitted for consideration by the Engineer. However, rejection of alternative methods suggested by the contractor shall not constitute a basis for claim against the Engineer.

The Work Plan shall show the layout, safety fence locations, and shall emphasize how the Contractor plans for temporary storage of materials to be used to install the scour protection. In addition, the Plan shall include details on the control, placement, and filling grout filled bags. Erosion and sediment controls, prepared in accordance with the project requirements, are required as well.

Excavation Plan: The Contractor shall submit an Excavation Plan to the Engineer for approval a minimum of 30 days prior to the start of scour protection construction. As part of the Excavation Plan, the Contractor shall field verify the depth of excavation required for the scour protection installation by soundings or other method. Sounding shall be preformed on a 25' x 25' grid pattern and extend beyond the limits of the scour protection. The Excavation Plan shall indicate the proposed method of excavation of material from within the proposed limits of work as shown on the Contract Drawings, diver safety measures, pump capacities, dewatering requirement calculations, methods disposal of excavated materials and used dewatering bags, turbidity curtain control, and installation of grout filled bags under tidal influence.

Quality Control Plan: The Contractor shall submit a Quality Control Plan to the Engineer for approval prior to the start of work. The Plan should include provisions for quality control and testing, preparation and submission daily field reports, products forms or receipts, and geosynthetic conformance testing as outlined in these specifications.

Accident Prevention Plan: The Contractor shall be responsible for maintaining site safety in accordance with, at a minimum, DelDOT and OSHA requirements for all items related to the installation and construction of scour protection. The Contractor shall submit for approval prior to the start of work its plan for accident prevention. The Plan shall comply with all provisions of this Contract and shall emphasize the protection and safety of the general public using the adjacent areas. The Plan shall show details of any barricades, warning signs, and equipment the Contractor intends to use in the implementation of the Accident Prevention Plan.

Materials:

*Geotextile: C*onform to the requirements of Subsection 827.06 "Geotextile - Riprap Ditch"

Articulating Precast Concrete Revetment Mats: Conform to the requirements of Bid Item 602614 “Underwater Revetment Mattress”

Grout Filled Geotextile Bag: Conform to the requirements of Bid Item 602789 “Underwater Grout Filled Geotextile Bags”

R-5 Riprap: Conform to the requirements of Subsection 712.04 "Riprap - Stone".

R-7 Riprap: Conform to the requirements of Subsection 712.04 "Riprap - Stone".

Delaware No. 57 Stone: Conform to the requirements of Section 813 "Grading Requirements Minimum and Maximum Percentages Passing".

Sand Backfill: Conform to the requirements of Section 818 "Mortar Sand".

Turbidity Curtain: Conform to Section 269 "Turbidity Curtain".

Dewatering Bag: Conform to the requirements of Bid Item 203500 “Hydraulic Excavation

Oil / Water Separator

1. INLET COMPARTMENT. Provide inlet compartment of sufficient volume to effectively reduce influent settleable solids and dissipate energy.

2. OUTLET COMPARTMENT. Provide outlet compartment capable of adjusting the output of the unit.

3. WASTEWATER SAMPLING PORTS. Equip inlet and outlet compartments with wastewater sampling ports permitting easy access for obtaining influent and effluent samples.

4. STORAGE. Provide oil and suspended solids collection, storage, and transfer systems as an integral part of the oil/water separator system.

5. The effluent concentrations shall not exceed 100 mg/L of oil and grease (petroleum hydrocarbons).

6. The Contractor shall containerize any oil that is removed by the oil/water separator in labeled drum(s) and shall alert DelDOT's Environmental Consultant so that the Consultant can make arrangements for off-site disposal of the oil.

7. DelDOT's Environmental Consultant will inspect the oil/water separator effluent for the presence of oil. If oil is found, the Contractor shall take immediate steps to modify the oil/water separator system to prevent oil discharge.

Polypropylene Oil Absorbent Booms

8. Oil/ hydrocarbon absorbent only.

9. Absorption capacity = 0.75 gallons of oil per foot of length.

10. Acceptable for use to remove floating oils from bodies of water.

11. Capable of linking units to form continuous barrier.

Construction Methods:

Submit Work Plan, Excavation Plan, Quality Control Plan, and Accident Prevention Plan to the Engineer for review and approval.

Amtrak Coordination: The Contractor shall coordinate with Amtrak to relocate any track materials that may be located within the area designated on the plans for scour protection geotextile dewatering bags (see Drawing MT-20).

Mobilization and Demobilization: The Contractor shall mobilize sufficient personnel and equipment at the work site to begin required operations at the site. Upon successful completion of the work required as specified herein, the Contractor shall remove all construction equipment, materials, supplies, and debris from the site.

Prior to construction, conduct an accurate survey of the stream bottom within the construction area and provide the Engineer with expected hydraulic excavation quantities.

Following completion of hydraulic excavation phases, conduct survey of the finished grade of the stream bottom prior to installation of geotextile and underwater grout filled geotextile bags. Should areas of overexcavation be found, conform to corrective measures outlined in Bid Item 203500 “Hydraulic Excavation”. Calculate the quantity of material excavated from the stream bottom, compare this value to the measurements of the dewatering bags volumes, and submit to the Engineer for review.

Installation: The Engineer reserves the right to review the geotextile products prior to installation for damage and imperfections. Defective geotextile products shall be marked and repaired. Trimming shall be performed using only an upward cutting hook blade.

Base Geotextile Placement: The base geotextile for the abutment wall foundation scour protection shall be installed by positioning it into place and providing temporary means on holding it in place so that the geotextile bags can be installed. The base geotextile shall be laid smooth to minimize tension, stress, folds, wrinkles, or creases. All seams shall be overlapped a minimum of 3 inches and field sewn.

Dewatering Bag: Conform to the requirements of Bid Item 203500 “Hydraulic Excavation”.

The Contractor shall use a floating skimmer and pump, connected to the oil/water separator, to collect oily water adjacent to the polypropylene oil absorbent booms. Oily water is defined as water containing visible oil sheen or floating oil layer on the water surface.

Place polypropylene oil absorbent booms to intercept water discharged from the dewatering bags. Secure booms to prevent damage during storms and to account for tidal actions.

As-Built Survey: Upon completion of the scour protection construction, an as-built survey by the Contractor's registered Surveyor shall be performed and submitted to the Engineer. Following acceptance of the as-built survey, the Contractor shall backfill the areas to the proposed elevations as shown on the Contract Drawings.

Following completion of all activities, removal all timber mats and other temporary materials. Regrade wetland areas as directed by the Engineer or by DNREC inspection personnel. Reseed all disturbed areas in accordance with Bid Items 734522 "Seed Mix No. 1" or 734524 "Seed Mix No. 3", or as directed by the Engineer.

Measurement and Basis of Payment:

The Bid Item 76324 "Scour Protection" will not be measured but will be paid for at the lump sum bid price, complete, in-place, accepted, which price will be full compensation initial stream channel surveys; as-built survey; polypropylene oil absorbent booms and their disposal; oil/water separator; pumps; oil skimmers; temporary storage barrels; regrading of disturbed areas; preparation of all work plans; and for all labor, equipment, tools, and incidentals required to complete the work, except as listed below:

Elements Paid for Separately:

Bid Item 203500 "Hydraulic Excavation"
Bid Item 269000 "Turbidity Curtain, Floating"
Bid Item 302005 "Graded Aggregate Base Course, Type B
Bid Item 302012 "Delaware No. 57 Stone"
Bid Item 601520 "Temporary Timber Mats"
Bid Item 602530 "Grout Repairs for Substructure"
Bid Item 602614 "Underwater Revetment Mattress"
Bid Item 602789 "Underwater Grout Filled Geotextile Bags"
Bid Item 712021 "Riprap, R-5"
Bid Item 712023 "Riprap, R-7"
Bid Item 713002 "Geotextile, Separation"
Bid Item 734522 "Seed Mix No. 1"
Bid Item 734524 "Seed Mix No. 3"
Bid Item 756000 "Sand"

11/17/10

763635 – RAILROAD ACCESS PERMITS

Description:

These items shall consist of securing access permits or "right-of-entry" permits from the three railroads with facilities on the construction site: Amtrak, CSX Transportation (CSXT) and Norfolk Southern Railroad (NS).

Secondly, these items will include coordination with CSXT and NS for maintenance of railroad traffic at the grade crossings in CSXT's West Yard (Wilmington end of project). The Contractor shall note that railroad invoices for flagging operations will be paid directly by DelDOT.

Thirdly, these items shall include all safety training required by each railroad, including subsequent annual refresher courses.

General:

The contractor shall coordinate directly with each of the three railroads. Refer to Appendix B: "Railroad Access Permit Requirements" for samples of each railroad's access permit.

The Contractor shall note that these agreements are subject to change and the latest versions, as supplied by each individual railroad, shall be utilized.

The Contractor shall conform to the requirements of each agreement. Where conflicts occur, the Contractor shall communicate these conflicts in writing to the Engineer and request assistance in resolving the conflict.

The Contractor shall provide three (3) copies of all correspondence between the railroad and the Contractor to the Engineer within seven (7) calendar days of transmittal / receipt. Copies shall be complete and contain all materials submitted / received. The Engineer will forward one copy of these materials to Mr. Vernon Lawton, DelDOT Construction.

Safety Training:

All individuals, including representatives and employees of the State or City (or other Authority that may have contracted with the Railroad), the Contractor, and any subcontractor, before entering onto the Railroad's property or coming within 7.6 m (25 feet) of the centerline of track or energized wire shall first attend the Railroad's Safety Orientation Class or other railroad approved safety class.

The Contractor shall note that each railroad will have different approved safety classes. This could require some personnel to attended three (3) different railroad safety classes each year.

No Charges to Railroad:

It is expressly understood that neither these Specifications, nor any document to which they are attached, includes any work for which the Railroad is to be billed by the Contractor or any subcontractor, unless the Railroad gives a written request that such work be performed at its expense.

Railroad Protective Services:

State, City (or other Authority letting the Contract) will pay directly to the Railroad, charges by the Railroad for protective services. Wages of the Railroad's Inspector and/or Engineers are deemed to be also

included in the Railroad's protection services. The services are performed to insure safe operations of trains when construction work would, in the Railroad's opinion, be a hazard to Railroad operations.

Protection services will be required whenever the Contractor is within 25 feet of the centerline of track or energized wire. This includes use of unsignalized grade crossings in CSXT's West Yard.

Insurance:

Insurance requirements shall be as stipulated in the access agreement for each of the three railroads. Refer to Appendix B: "Railroad Access Permit Requirements" for samples of each railroad's access permit and insurance requirements. The Contractor shall note that these insurance requirements are subject to change and that the most current versions, as supplied by each individual railroad, shall be utilized. Separate policies shall be obtained for each agreement.

Basis of Payment:

Payment for Railroad Access Permits, as herein required, shall be paid for at the Contract Lump Sum price bid for "Railroad Access Permits", which price and payment shall constitute full compensation for the above requirements for all three railroad access permits, which include but are not limited to, all coordination, obtaining and furnishing the required insurance coverage to fulfill the insurance requirements of each individual railroad's access permit, initial railroad safety training, railroad safety training refresher courses, and maintenance of traffic for CSXT and NS operations within CSXT's West Yard, during the life of the Contract, except Protective Services (railroad flagging operations) which will be paid directly to the Railroad by the State; all incidental costs imposed by the Railroad on the Contractor arising from the need to meet any or all requirements outlined herein; and for all materials, labor, tools, equipment, appurtenance, and incidentals necessary to complete the item.

Any damage to Railroad property or facilities caused by the Contractor's operations shall be repaired by the Contractor at its own expense and to the satisfaction of the Railroad.

11/17/10

763636 – RAILROAD TIME DELAY

Description:

This section covers delays to the Contractor for interruptions of his construction operations due to the failure of Amtrak flagging personnel to be present at agreed times or the cancelling of previously approved track or catenary outages.

Materials:

None.

Construction Methods:

The Contractor shall assess his requirements for flaggers and catenary or track outages a minimum of 30 calendar days in advance.

Requests for these flaggers or catenary or track outages shall be submitted to Amtrak for review and approval a minimum of 30 calendar days in advance with copies of all correspondence provided to the Engineer. The Contractor shall note that Amtrak may require longer review periods for approvals. The Contractor shall conform to Amtrak's requirements.

The Contractor shall note that Amtrak requires flaggers whenever construction is 25'-0" or less from the centerline of an active track. All tracks shall be considered active unless Amtrak provides written verification to the contrary. Due to the physical characteristics of the project, all activities within Amtrak's right-of-way will require flaggers.

The Contractor should assume that Amtrak will require construction activities to be contiguous and that multiple construction sites within Amtrak right-of-way will not be approved.

Requests for flaggers or catenary or track outages will not be deemed to be approved until the Contractor receives written approval from Amtrak and provides a copy of this approval to the Engineer.

Should Amtrak fail to provide flaggers at approved times on approved dates or cancel approved catenary or track outages at approved times on approved dates, the Contractor shall immediately notify the Engineer of this Railroad Time Delay.

Method of Measurement:

Railroad Delay Time will be measured on the basis of each hour or fraction thereof, up to a maximum of four (4) hours per 24 hour period, as determined by the Engineer, of interruption time from lack of flaggers or curtailment / cancellation of catenary or track outages approved in writing by Amtrak, with copies provided to the Engineer.

Basis of Payment:

Railroad Delay Time will be paid for at the Contract unit price per hour of "Railroad Delay Time". Price and payment will constitute full compensation for all labor, equipment, tools and incidentals required to complete the work.

11/17/10

UTILITY STATEMENT

STATE CONTRACT NO. 27-512-01
PROJECT ID NO.
F.A.P. NO.

DELAWARE TRANSIT CORPORATION
Track Improvements South of Wilmington Station
New Castle County

The following companies maintain facilities within the contract limits:

Amtrak (Electric - Catenary)
Amtrak (Electric – Transmission)
Amtrak (Communications)
Delmarva Power (Electric - Transmission)
Delmarva Power (Electric - Distribution)
Delmarva Power (Natural Gas Line)
United Water - DE (Water)
New Castle County (Sanitary Sewer)

The following is a breakdown of the utilities involved, adjustments and/or relocations as required (all stations, offsets, lengths and calendar days are approximate):

Amtrak (Electric - Catenary)
Amtrak maintains catenary wires 20'± above top of rail on the three (3) northern existing tracks west (Baltimore side) of Sta. 310+00 (Milepost 29.68). East of this point (Philadelphia side), the catenary is only located on the two (2) northernmost tracks.

Proposed changes by Amtrak forces under a future contract includes addition of new catenary wires over three tracks to create three high speed continuously welded rail tracks and replacement of the existing siding with Norfolk Southern main line (no catenary).

The elevations of existing catenary wires will not be modified.

No DTC contractors will modify or install any catenary for the Third Track project.

The Contractor shall note that an existing down guy at Sta. 363+65, Lefi, will require coordination with Amtrak ET for both temporary and permanent relocation of this guy.

The Contractor shall take special precautions when working in the vicinity of down guys or catenary poles. Coordinate with Amtrak regarding the required protection to be installed at each down guy or catenary near proposed activities. Unless a bid item has been included for this work, down guy and catenary pole protection measures shall be considered incidental to the contract.

Amtrak (Electric – Transmission)
Amtrak maintains 138 kVA electric transmission lines above the catenary wires throughout the Northeast Corridor.

No modifications or impacts to these facilities are expected to result from the proposed construction.

The Contractor shall assume that these transmission lines will remain energized throughout the contract period and that required clearances shall be maintained at all times.

Amtrak (Communications)
Amtrak maintains a terra cotta communications duct bank on one side of the tracks. From Sta. 300+00, Left, to Sta. 362+00, Left, (just south of Little Mill Creek) the duct is located approximately 15 feet north of the track. At Sta. 362+00, the duct crosses beneath the tracks and crosses Little Mill Creek on the bridge for Norfolk Southern's freight track. East of Little Mill creek, the duct bank is centered between West Yard and Norfolk Southern's freight track (approximately 65 feet south of the proposed Third Track). The duct bank continues along the south side of the rail corridor to a point beyond the east end of the project.

This duct bank contains Amtrak train control circuits, and other fiber optics cables rented by various communication companies.

No modifications or impacts to this facility are expected to result from the proposed construction.

Delmarva Power (Electric - Transmission)
Delmarva Power maintains 69 kVA electric transmission line that crosses Amtrak's corridor at Sta. 373+50.

No modifications or impacts to this facility are expected to result from the proposed construction.

Delmarva Power (Electric - Distribution)
Delmarva Power has an electrical distribution line that crosses Amtrak's corridor at Sta. 339+60.

No modifications or impacts to this facility are expected to result from the proposed construction.

The Contractor shall assume that these transmission lines will remain energized throughout the contract period and that required clearances shall be maintained at all times.

Delmarva Power (Natural Gas Line)
Delmarva Power maintains a 12 inch gas line that crosses Amtrak's corridor at Sta. 352+15.

No modifications or impacts to this facility are expected to result from the proposed construction.

United Water - DE
United Water maintains one 20 inch and one 30 inch water line from west of the project (Baltimore side) to the divergence of the Shellpot Branch line from Amtrak's corridor. From this point east (toward Philadelphia) the water lines parallel the Shellpot Branch and proceed under I-95.

Near the point where the Shellpot Branch and the two water lines cross under I-95, a 10 inch water line branches off and crosses Little Mill Creek just downstream of the bridges. This 10 inch water line is parallel to and south of the Amtrak communications duct bank that runs between West Yard and the Northeast corridor. Per United Water, this 10 inch line has been abandoned. The Contractor shall coordinate with United Water to confirm that the 10 inch water line is abandoned.

Proposed modifications by DTC's contractor include providing/installing protection (Bid Item 302005 - Graded Aggregate Base Course) as directed by United Water for water lines under existing access roads. No other modifications or impacts to these facilities are expected to result from the proposed construction.

New Castle County (Sanitary Sewer)

New Castle County maintains a 72 inch sanitary force main to the south of Amtrak's tracks from west of Sta. 300+00, Right, to Sta. 357+00, Right. At Sta. 357+00, Right, it is joined by a 36 inch sanitary force main to become a 78 inch sanitary force main which crosses under I-95 to the south. The 36 inch sanitary force main crosses Amtrak's corridor at Sta. 361+00 and proceeds northward.

A gravity sanitary sewer follows Amtrak's north right-of-way line for west of Sta. 300+00, Left, (33 inch diameter) until it diverges from the right-of-way at Sta. 352+90, Left.

No modifications or impacts to this facility are expected to result from the proposed construction.

GENERAL NOTES:

1. THE UTILITIES AND THEIR CONTRACTORS DO NOT NORMALLY WORK ON WEEKENDS OR LEGAL HOLIDAYS!

2. IT IS UNDERSTOOD AND AGREED THAT THE STATE'S CONTRACTOR HAS CONSIDERED IN HIS BID ALL PERMANENT AND TEMPORARY UTILITY APPURTENANCES IN THEIR PRESENT OR RELOCATED POSITIONS AS SHOWN ON THE PLANS OR DESCRIBED IN THE UTILITY STATEMENT AND/OR ARE READILY DISCERNIBLE AND THAT NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ANY DELAYS, INCONVENIENCE, OR DAMAGE SUSTAINED BY HIM/HER DUE TO ANY INTERFERENCE FROM THE SAID UTILITY FACILITIES AND APPURTENANCES OR THE OPERATION OF MOVING THEM, EXCEPT THAT THE STATE'S, CONTRACTORS MAY BE GRANTED AN EQUITABLE EXTENSION OF TIME. THE STATE'S CONTRACTOR IS RESPONSIBLE FOR THE SUPPORT AND PROTECTION OF ALL UTILITIES WHEN EXCAVATING.

3. THE STATE'S CONTRACTOR IS RESPONSIBLE FOR ROUGH GRADING AS REQUIRED BY THE ROADWAY CONSTRUCTION PRIOR TO THE UTILITY COMPANY'S PLACING THEIR PROPOSED FACILITIES, UNLESS INDICATED ON THE PLANS AND/OR OUTLINED ELSEWHERE IN THESE SPECIFICATIONS.

4. COORDINATION AND COOPERATION AMONG THE UTILITY COMPANIES AND THE STATE'S CONTRACTOR ARE OF PRIME IMPORTANCE. THEREFORE, THE CONTRACTOR IS DIRECTED TO CONTACT THE FOLLOWING UTILITY COMPANY REPRESENTATIVES WITH ANY QUESTIONS REGARDING THIS WORK PRIOR TO

SUBMITTING BIDS AND WORK SCHEDULES. PROPOSED WORK SCHEDULES SHALL REFLECT THE UTILITY COMPANIES' PROPOSED RELOCATIONS.

Mr. Raymond Verrelle	Amtrak (Electric - Catenary)	215-349-1907
Mr. Raymond Verrelle	Amtrak (Electric – Transmission)	215-349-1907
Mr. Terry Tiller	Amtrak (Communications)	215-349-1411
Mr. Ray Rouault	Delmarva Power (Electric - Transmission)	302-454-5174
Mr. Guy Eberwine	Delmarva Power (Electric - Distribution)	302-934-3354
Mr. Phil Phillips	Delmarva Power (Natural Gas Line)	302-429-3846
Mr. Ted Harris	United Water – DE	302-633-5905

PREPARED AND RECOMMENDED BY:

Rummel, Klepper & Kahl, LLP
Consulting Engineers

4/22/09
Date

APPROVED AS TO FORM:

Utilities Coordinator, DelDOT

2-5-10
Date

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
PO BOX 778
DOVER, DELAWARE 19905

CERTIFICATE OF RIGHT-OF-WAY STATUS

STATE PROJECT NO. 27-512-01

F.A.P. NO. N/A for R/W

NORTHEAST CORRIDOR IMPROVEMENTS YARD TO RAGAN, CIVIL, STRUCTURE

NEW CASTLE COUNTY

This is to certify that all project rights of way is currently available in accordance with the project right-of-way plans.

REAL ESTATE SECTION

Carol V. O'Donoghue
Assistant Chief Real Estate

May 29, 2009

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
PO BOX 778
DOVER, DELAWARE 19905

UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITIONS POLICIES ACT
49 CFR, PART 24
ASSISTANCE FOR DISPLACED FAMILIES AND BUSINESSES
AND
ASSISTANCE PAYMENTS

FOR
STATE PROJECT NO. 27-512-01

F.A.P. NO. N/A for R/W

NORTHEAST CORRIDOR IMPROVEMENTS YARD TO RAGAN, CIVIL, STRUCTURE

NEW CASTLE COUNTY

This is to certify that there are no relocations involved on this subject project.

REAL ESTATE SECTION

Carol V. O'Donoghue
Assistant Chief Real Estate

May 29, 2009

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

CAROLANN WICKS, P.E.
SECRETARY

ENVIRONMENTAL REQUIREMENTS

for
State Contract No. 27-512-01
FTA funded

Contract Title: Rail Improvements, Third Track, Newark to Wilmington

In accordance with the procedural provisions for implementing the National Environmental Policy Act of 1969, as amended, the referenced project has been processed through the Department's Environmental Review Procedures and has been classified as a Level D/ Class II Action. As such, a Categorical Exclusion has been prepared to evaluate potential adverse impacts to result from construction of the proposed action (per 23 CFR 771.117 d(3)) and the following special provisions have been developed to mitigate and/or minimize these impacts.

PERMIT REQUIREMENTS:

The construction work that will occur along the Northeast Corridor of AMTRAK in New Castle County, Delaware requires permit approval from those agencies listed below. It is the responsibility of the contracting agency, the Delaware Department of Transportation, Division of Highways to obtain the necessary permits to ensure that the contractor complies with the requirements and conditions established by the permitting agencies. Copies of the permits must be available on site during all phases of construction activity. Advanced copies of the permits may be obtained from DelDOT Contract Administration, Highway Administration Building, Dover.

Required Permits and Approval Status:

U.S. Army Corps of Engineers - Nationwide Permit # 13, 18, and 33 – approved

DNREC – Subaqueous Lands Permit and Wetlands Permit - approved

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

CAROLANN WICKS, P.E.
SECRETARY

SPECIFIC REQUIREMENTS:

Compliance with all requirements of the permits is the responsibility of the contractor. The contractor will follow all special conditions or requirements as stated within those permits. The contractor will be subject to penalties, fines, and the risk of shut down as mandated by law if conditions of the permits are violated or ignored. Therefore, all special conditions, general requirements, and/or other required provisions specified within the permits must be followed. Those obligations are indicated or listed within the permit package, which can be obtained from the DelDOT Contract Administration Office.

Additional requirements by DelDOT not specified within the permits, but listed below, or on the Environmental Compliance Sheet is also the responsibility of the contractor and is subject to risk of shut down at the contractor's expense.

1. The contractor shall employ measures during construction to prevent spills of fuels, or lubricants, if a spill should occur, efforts shall be undertaken to prevent its entry into wetlands, aquatic, or drainage areas. Any spills entering wetlands, aquatic, or drainage areas shall be removed immediately. The Division of Water Resources (DNREC), Wetlands & Aquatic Protection Branch, 302-739-4691, shall be notified of any spill(s) within six (6) hours of their occurrence. That office will determine the effectiveness of spill and contamination removal and specify remediation efforts as necessary.

2. All construction debris, excavated material, brush, rocks, and refuse incidental to such work shall be placed either on shore above the influence of flood waters or on some suitable disposal site approved by the department.

3. The disposal of trees, brush, and other debris in any stream corridor, wetland surface water or any drainage ditch is prohibited.

4. There shall be no stockpiling of construction materials or temporary fills in wetlands or subaqueous lands unless otherwise specified on project plans and approved by permitting agencies that govern them. It is the contractor's responsibility to coordinate and secure those additional permits/amendments in deviating from the plan.

5. The effort shall be made to keep construction debris from entering adjacent waterways, wetlands, ground cover, or drainage areas. Any debris that enters these areas shall be

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removed immediately. Netting, mats, or establishing confined work areas in stages may be necessary to address these issues.

6. If routine maintenance of worker equipment and heavy machinery is necessary during the construction period, refuse material is prohibited from being disposed or deposited onto or into the ground. All used oils and filters must be recycled or disposed of properly.

7. Harmful chemical wash water applied to clean equipment or machinery shall be discouraged. If undertaken, the residue water and/or material must be collected or contained such that it will be disposed of properly. By no means, shall it be deposited or disposed of in waterways, streams, wetlands, or drainage areas.

8. The contractor shall follow all requirements as indicated in the Environmental Compliance Sheet. It will be the contractor's responsibility, expense, & effort to ensure that workers also follow these requirements. As part of the restrictions, please note the time tables reflected in the contract for the in-stream/water work for endangered species protection.

9. That the fill material shall be free of oil and grease, debris, wood, general refuse, plaster and other pollutants, and shall contain no broken asphalt.

CULTURAL RESOURCE REQUIREMENTS:

1. The contractor will submit to the District, the location(s) of permanent disposal sites to be used for the disposition of clean wasted materials resulting from the construction contract. The contractor will submit a the Preconstruction meeting, a location map and a plot plan (sketch or diagram) of where on the property clean wasted material is to be placed. The limits of the site(s) will be physically staked or surveyed on the property. The District will submit the contractor's disposal site location(s) to the State Historic Preservation Office for approval.

   The SHPO will determine if a cultural resource survey is required before the site can be approved. If additional survey work is required, it will be the contractor's responsibility to hire a qualified professional to assess the site(s) for the presence or absence of cultural resources (i.e. historic or prehistoric archeological sites). The contractor's consultant will be responsible for producing documentation of the survey results for submission to the SHPO.

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If the contractor proposes the use of disposal sites outside the State of Delaware, the contractor must provide written approval from the State Historic Preservation Office of each respective state.

A project's disposal operation will not commence until the SHPO has notified the DelDOT District office that the site location(s) is approved for use.

The use of the disposal site will not result in discharge of materials into the U.S. Army Corps of Engineer or DNREC jurisdictional wetlands or waters. It is the responsibility of the contractor to provide any site surveys or wetland delineations needed to preclude wetland encroachment.

The contractor will be responsible for all sediment and erosion control measures and subsequent approvals required for the disposal site(s) operations.

It is the contractor's responsibility to obtain all other appropriate Federal, State, or local approvals required by law for use of the disposal site(s).

ENVIRONMENTAL COMPLIANCE SHEET:

1. As indicated on plans and specifications, the contractor shall pay special attention to specific construction requirements as indicated in the Environmental Compliance Sheet.

2. Please make special note of the Project Specific Special Condition #1 on the DNREC Subaqueous Lands and Wetlands Permit, which requires that bird exclusion netting be placed in the bridge before April 15th of the construction year to prevent the nesting of migratory birds. The netting shall be maintained through August 1 or until the start of construction.

3. Please make special note of the Project Specific Special Condition #2 on the DNREC Subaqueous Lands and Wetlands Permit which requires no in-stream work be conducted in Little Mill Creek and no pile driving on the bank from March 15 to May 31 (any calendar year) in order to protect anadromous fish species.

4. Please make special note of the Project Specific Special Condition #3 on the DNREC Subaqueous Lands and Wetland Permit which requires that all dredging shall be completed

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using a hydraulic dredge. The dredge materials shall be temporarily contained in geotextile fabric bags on the Amtrak property. Prior to disposal of the sediments, sediment analysis shall be conducted to determine the presence of contaminants in the materials and determine the correct disposal of the material. A copy of the laboratory analytical results and the proposed disposal location shall be submitted to the Wetlands and Subaqueous Lands Section within six moths of the completion of dredging. No materials shall be disposed until the disposal site has been approved by the Wetlands and Subaqueous Lands Section.

5. Please make special note of the Project Specific Special Condition #12 on the DNREC Subaqueous Lands and Wetland Permit which requires the source of the clean sand to be used as backfill in Little Mill Creek to be submitted prior to use. All fill material, including the sands, shall be clean and free from oils, grease, asphalt, and other contaminants.

BID PROPOSAL FORMS

CONTRACT T200751201.01

FTA NO. DE-03-0016 and DE-05- 0014

CFDA NO. 20.500

FHWA No. HPP-2005(028)

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 RAIL					
0010	201000 CLEARING AND GRUBBING	LUMP	LUMP			
0020	202000 EXCAVATION AND EMBANKMENT	3300.000 CY				
0030	202502 GRADING AND RESHAPING EXISTING SUBGRADE	14500.000 SY				
0040	202532 REMOVAL OF CONTAMINATED MATERIAL	1000.000 TON				
0050	202536 SITE SAFETY PLAN	LUMP	LUMP			
0060	202563 DEFORMATION MONITORING POINT	42.000 EACH				
0070	202564 FIELD SURVEY AND DATA REDUCTION FOR DEFORMATION MONITORING POINT	22848.000 EACH				
0080	202565 TILT PLATES	20.000 EACH				
0090	202566 FIELD READING AND DATA REDUCTION FOR TILT PLATES	5480.000 EACH				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0100	202567 DRACK GAUGES	6.000 EACH				
0110	202568 FIELD READING AND PLOTTING FOR CRACK GAUGES	258.000 EACH				
0120	203500 HYDRAULIC EXCAVATION	1750.000 CY				
0130	207000 EXCAVATION AND BACKFILL FOR STRUCTURES	726.000 CY				
0140	207505 SUPPORT OF EXCAVATION	LUMP	LUMP			
0150	208000 EXCAVATION AND BACKFILLING FOR PIPE TRENCHES	100.000 CY				
0160	209001 BORROW, TYPE A	500.000 CY				
0170	209002 BORROW, TYPE B	500.000 CY				
0180	210000 FURNISHING BORROW TYPE "C" FOR PIPE, UTILITY TRENCH, AND STRUCTURE BACKFILL	726.000 CY				
0190	212000 UNDERCUT EXCAVATION	1000.000 CY				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0200	250000 SEDIMENT REMOVAL	200.000 CY				
0210	251000 SILT FENCE	5080.000 LF				
0220	254000 STONE CHECK DAM	75.000 TON				
0230	255000 SEDIMENT TRAP	200.000 CY				
0240	268000 STABILIZED CONSTRUCTION ENTRANCE	225.000 TON				
0250	269000 TURBIDITY CURTAIN, FLOATING	1500.000 LF				
0260	270000 PORTABLE SEDIMENT TANK	3.000 EACH				
0270	302005 GRADED AGGREGATE BASE COURSE, TYPE B	3200.000 TON				
0280	302012 DELAWARE NO. 57 STONE	370.000 TON				
0290	302512 FURNISH AND PLACE STONE	5900.000 TON				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0300	601514 RAILROAD AT GRADE CROSSING	96.000 EACH				
0310	601520 TEMPORARY TIMBER MAT	LUMP	LUMP			
0320	602001 PORTLAND CEMENT CONCRETE MASONRY, CLASS A	317.000 CY				
0330	602018 PORTLAND CEMENT CONCRETE MASONRY, CLASS D	37.000 CY				
0340	602530 GROUT REPAIRS FOR SUBSTRUCTURE	200.000 CY				
0350	602614 UNDERWATER REVETMENT MATTRESS	3825.000 SF				
0360	602625 POST AND PLANK RETAINING WALL	6875.000 SF				
0370	602789 UNDERWATER GROUT FILLED GEOTEXTILE GROUT BAG	465.000 CY				
0380	603000 BAR REINFORCEMENT	41014.000 LB				
0390	604000 BAR REINFORCEMENT, EPOXY COATED	7767.000 LB				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0400	605001 STEEL STRUCTURES	3800.000 LB				
0410	605522 URETHANE PAINT SYSTEM, EXISTING STEEL	LUMP	LUMP			
0420	605533 CLEANING EXISTING STEEL STRUCTURES, HAZARDOUS BASE, (L.S.)	LUMP	LUMP			
0430	605578 REPLACING STEEL RIVETS/BOLTS	300.000 EACH				
0440	605626 DISMANTLE AND ERECT BRIDGE SUPERSTRUCTURE	LUMP	LUMP			
0450	605651 REPLACING BRIDGE BEARING, SPECIAL	4.000 EACH				
0460	605655 BEARING ANCHOR BOLT REPLACEMENT	12.000 EACH				
0470	605728 SUPERSTRUCTURE	LUMP	LUMP			
0480	606001 METAL BRIDGE RAILING, STEEL	554.000 LF				
0490	608000 COARSE AGGREGATE FOR FOUNDATION STABILIZATION AND SUBFOUNDATION BACKFILL	55.000 TON				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0500	612031 REINFORCED CONCRETE PIPE, 24", CLASS V	412.000 LF				
0510	614005 GALVANIZED CORRUGATED STEEL PIPE, 24", 16 GAGE, 2 2/3" X 1/2" CORRUGATION	30.000 LF				
0520	614817 BORE 20" STEEL PIPE CASING	586.000 LF				
0530	617005 REINFORCED CONCRETE FLARED END SECTION, 24"	2.000 EACH				
0540	617515 HEADWALL	1.000 EACH				
0550	618060 STEEL H PILES, HP 12 X 53	7434.000 LF				
0560	619040 INSTALL STEEL H PILES, HP 12 X 53	7434.000 LF				
0570	619520 DRILLED MICROPILES	7922.000 LF				
0580	619521 MICROPILE LOAD TESTING	6.000 EACH				
0590	708512 DRAINAGE INLET, SPECIAL I	1.000 EACH				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0600	710504 ADJUSTING MANHOLES	1.000 EACH				
0610	712020 RIPRAP, R-4	30.000 TON				
0620	712021 RIPRAP, R-5	455.000 TON				
0630	712023 RIPRAP, R-7	735.000 TON				
0640	713002 GEOTEXTILES, SEPARATION	1800.000 SY				
0650	713003 GEOTEXTILES, RIPRAP	550.000 SY				
0660	727014 CONSTRUCTION SAFETY FENCE	2000.000 LF				
0670	727015 MONUMENTS	5.000 EACH				
0680	732002 TOPSOIL, 6" DEPTH	4000.000 SY				
0690	734018 TEMPORARY GRASS SEEDING, WET GROUND	1500.000 SY				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0700	734508 TEMPORARY SEED MIX	20000.000 SY				
0710	734510 REFERTILIZATION OF PERMANENT SEED MIX	3.000 ACRE				
0720	734522 SEED MIX #1	1245.000 SY				
0730	734523 SEED MIX #2	2000.000 SY				
0740	734524 SEED MIX #3	9176.000 SY				
0750	735533 SOIL RETENTION BLANKET MULCH, TYPE 3	11176.000 SY				
0760	735535 SOIL RETENTION BLANKET MULCH, TYPE 5	1245.000 SY				
0770	743056 FLAGGER, NEW CASTLE COUNTY, FEDERAL	6000.000 HOUR	41.67000		250020.00	
0780	743065 FLAGGER, NEW CASTLE COUNTY, FEDERAL, OVERTIME	1000.000 HOUR	60.42000		60420.00	
0790	756000 SAND	1000.000 TON				

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0800	759501 FIELD OFFICE, SPECIAL	24.000 EAMO				
0810	763000 INITIAL EXPENSE	LUMP	LUMP			
0820	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
0830	763502 MAINTENANCE OF RAILROAD TRAFFIC	LUMP	LUMP			
0840	763508 PROJECT CONTROL SYSTEM DEVELOPMENT PLAN	LUMP	LUMP			
0850	763509 CPM SCHEDULE UPDATES AND/OR REVISED UPDATES	18.000 EAMO				
0860	763522 COAST GUARD SPECIFIC CONDITIONS	LUMP	LUMP			
0870	763623 NETTING MIGRATORY BIRD EXCLUSION	LUMP	LUMP			
0880	763624 SCOUR PROTECTION	LUMP	LUMP			
0890	763635 RAILROAD ACCESS PERMITS	LUMP	LUMP			

CONTRACT ID: T200751201.01 PROJECT(S): HPP-2005(028)

All figures must be typewritten.

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0900	763636 RAILROAD TIME DELAY	1080.000 HOUR				
	SECTION 0001 TOTAL					
	TOTAL BID					

REQUIRED FORMS

NOTE TO BIDDERS:

This Certification of Compliance, or, this Certification of Non-Compliance, must be completed in full, notarized and submitted with your bid or your bid will not be accepted.

BUY AMERICA CERTIFICATION

CERTIFICATION OF COMPLIANCE

The bidder hereby certifies that it will comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 CFR 661.11:

Date: _____

Signature: _____

Title: _____

Company Name: _____

or;

CERTIFICATION OF NON-COMPLIANCE

The Bidder hereby certifies that he/she cannot comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. Sections 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 CFR 661.7.

Date: _____

Signature: _____

Title: _____

Company Name: _____

Sworn and subscribed before me this _____ day of _____, 2011

My commission expires _____.

_____

Notary Public

CERTIFICATION OF ELIGIBILITY

_____ hereby certifies that it is not included on the United States Comptroller General's Consolidated List of Persons or Firms Currently Debarred for Violations of Various Public Contracts Incorporating Labor Standard Provisions.

Signed: _____

Title: _____

Date: _____

Sworn and subscribed before me this _____ day of _____, 2011.
My commission expires _____.

_____
Notary Public

CERTIFICATE OF NON-COLLUSION

By submission of this bid, each bidder and each person signing on behalf of any bidder 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 knowledge and belief:

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

2) 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 be disclosed by the Bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

3) 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.

_____
Company Name

_____
Authorized Signature

_____
Date

Sworn and subscribed before me this _____ day of _____, 2011.
My commission expires _____.

_____
Notary Public

CERTIFICATION OF PRIMARY PARTICIPANT REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

The Primary Participant (applicant for an FTA grant or cooperative agreement, or potential contractor for a major third party contract), _____ certifies to the best of its knowledge and belief, that it and its principals:

1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and
4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or Local) terminated for cause or default.

If the primary participant (applicant for an FTA grant or cooperative agreement, or potential third party contractor) is unable to certify to any of the statements in this certification, the participant shall attach an explanation to this certification.

The Primary Participant (applicant for an FTA grant or cooperative agreement, or potential contractor for a major third party contract), _____ certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification and understands that the provisions of 31 U.S.C. Sections 3801 et seq, are applicable thereto.

_____
Signature and Title of Authorized Official

_____
Date

CERTIFICATION OF RESTRICTIONS ON LOBBYING

The Bidder or Offeror certifies, to the best of its knowledge and belief, that:

1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of a Federal department or agency, a Member of the U.S. Congress, an officer or employee of the U.S. Congress, or an employee of a Member of the U.S. Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification thereof.

2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions (as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)).

3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

THE BIDDER OR OFFEROR, _____, CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF EACH STATEMENT OF ITS CERTIFICATION AND DISCLOSURE, IF ANY. IN ADDITION, THE BIDDER OR OFFEROR UNDERSTANDS AND AGREES THAT THE PROVISIONS OF 31 U.S.C. §§ 3801 ET SEQ. APPLY TO THIS CERTIFICATION AND DISCLOSURE, IF ANY.

_____Signature of the Bidder or Offeror's Authorized Official

_____Name and Title of the Bidder or Offeror's Authorized Official

_____Date

CERTIFICATION

Contract No. T200751201.01
Federal Aid Project No. DE-03-0016, DE-05- 0014, and HPP-2005(028)

The undersigned bidder, _____ whose address is _____ _____ and telephone number is _____ ____hereby certifies the following:

I/We have carefully examined the location of the proposed work, the proposed plans and specifications, and will be bound, upon award of this contract by the Department of Transportation, to execute in accordance with such award, a contract with necessary surety bond, of which contract this proposal and said plans and specifications shall be a part, to provide all necessary machinery, tools, labor and other means of construction, and to do all the work and to furnish all the materials necessary to perform and complete the said contract within the time and as required in accordance with the requirements of the Department of Transportation, and at the unit prices for the various items as listed on the preceding pages.

Bidder's Certification Statement [US DOT Suspension and Debarment Regulation (49 CFR 29)]:

NOTICE: All contractors who hold prime contracts (Federal Aid) with DelDOT are advised that the prime contractor and subcontractors are required to submit to DelDOT a signed and notary attested copy of the Bidder Certification Statement for each and every subcontract that will be utilized by the prime contractor. This Certification **must** be filed with DelDOT prior to written approval being granted for each and every subcontractor. Copies of the Certification Form are available from the appropriate District Construction Office.

Under penalty of perjury under the laws of the United States, that I/We, or any person associated therewith in the capacity of (owner, partner, director, officer, principal, investigator, project director, manager, auditor, or any position involving the administration federal funds):

a. am/are not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
b. have not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;
c. do not have a proposed debarment pending; and,
d. have not been indicted, convicted, or had a civil judgement rendered against (it) by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted, indicate below to whom it applies, initiating agency, and dates of action. Providing false information may result in criminal prosection or administrative sanctions.

_____

_____

_____

(Insert Exceptions)

DBE Program Assurance:

NOTICE: In accordance with 49 CFR Part 26 the undersigned, a legally authorized representative of the bidder listed below, must complete this assurance.

By its signature affixed hereto, assures the Department that it will attain DBE participation as indicated:

Disadvantaged Business Enterprise _____ percent (blank to be filled in by bidder)

The foregoing quantities are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the amount of any item or portion of the work as may be deemed necessary or expedient. Any such increase or decrease in the quantity for any item will not be regarded as a sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided in the contract.

Accompanying this proposal is a surety bond or a security of the bidder assigned to the Department of Transportation, for at least ten (10) percentum of total amount of the proposal, which deposit is to be forfeited as liquidated damages in case this proposal is accepted, and the undersigned shall fail to execute a contract with necessary bond, when required, for the performance of said contract with the Department of Transportation, under the conditions of this proposal, within twenty (20) days after date of official notice of the award of the contract as provided in the requirement and specifications hereto attached; otherwise said deposit is to be returned to the undersigned.

I/We are licensed, or have initiated the license application as required by Section 2502, Chapter 25, Title 30, of the Delaware Code.

By submission of this proposal, each person signing on behalf of the bidder, certifies as to its own organization, under penalty of perjury, that to the best of each signer's knowledge and belief:

1. The prices in this proposal have been arrived at independently without collusion, consultation, communication, or Agreement with any other bidder or with any competitor for the purpose of restricting competition.
2. Unless required by law, the prices which have been quoted in this proposal have not been knowingly disclosed and will not knowingly be disclosed by the bidder, directly or indirectly, to any other bidder or competitor prior to the opening of proposals.
3. 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 proposal for the purpose of restricting competition.

==========

I/We acknowledge receipt and incorporation of addenda to this proposal as follows:

No. Date No. Date No. Date No. Date No. Date

_____ _____ _____ _____ _____

FAILURE TO ACKNOWLEDGE RECEIPT OF ALL ADDENDA AND FINAL QUESTIONS AND ANSWERS WILL RESULT IN THE BID BEING DECLARED NON-RESPONSIVE.

MUST INSERT DATE OF FINAL QUESTIONS AND ANSWERS ON WEBSITE: _____

==========

Sealed and dated this _____ day of _____ in the year of our Lord two thousand _____ (20___).

_____
Name of Bidder (Organization)

Corporate Seal

By: _____
Authorized Signature

Attest _____

_____
Title

SWORN TO AND SUBSCRIBED BEFORE ME this ___ day of _____, 20____.

Notary Seal

_____
Notary

T200751201.01

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That:_____ _____of_____ in the County of _____and State of _____ ____ as **Principal**, and _____ of _____ in the County of _____ and State of _____ as **Surety**, legally authorized to do business in the State of Delaware ("**State**"), are held and firmly unto the **State** in the sum of _____ _____Dollars ($_____), or _____ percent not to exceed _____ _____ Dollars ($_____) of amount of bid on Contract No._T200751201.01___, to be paid to the **State** for the use and benefit of its Department of Transportation ("**DelDOT**") for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden **Principal** who has submitted to the **DelDOT** a certain proposal to enter into this contract for the furnishing of certain materiel and/or services within the **State**, shall be awarded this Contract, and if said **Principal** shall well and truly enter into and execute this Contract as may be required by the terms of this Contract and approved by the **DelDOT**, this Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our Lord two thousand _____ (20___).

SEALED, AND DELIVERED IN THE
presence of

_____
Name of Bidder (Organization)

Corporate Seal

By: _____
Authorized Signature

Attest _____

_____
Title

_____
Name of **Surety**

Witness:_____

By: _____

_____
Title