

DIVISION 500 - BRIDGES AND STRUCTURES

SECTION 501 - CONCRETE STRUCTURES

501.01 DESCRIPTION

THE SECOND THROUGH SIXTH PARAGRAPHS ARE DELETED.

501.02 MATERIALS

THE SECOND THROUGH SIXTH PARAGRAPHS ARE CHANGED TO:

The pressure injected epoxy shall meet the requirements of ASTM C 881, Type I or IV, Grade 1, Class B or C. The epoxy crack sealant shall be recommended by the pressure injected epoxy manufacturer. Certifications of compliance shall be furnished according to Subsection 106.04.

The pressure injected epoxy shall be capable of penetrating the cracks to their full depth and capable of bonding to the surfaces of cracked concrete.

Silica fume shall not be used as a sole material to achieve the desired resistance to chlorides. When used, silica fume's content shall be limited to a maximum of 5 percent of the total cement content and a proportion of fly ash or ground granulated blast furnace slag shall be included to obtain the resistance specified in 914.02 to chloride penetration.

501.07 FORMS

7. Permanent Steel Bridge Deck Forms.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS CHANGED TO:

The use of permanent steel bridge deck forms shall conform to the following:

a. Design.

THE SEVENTH PARAGRAPH IS CHANGED TO:

The spacing (pitch) of the ribs (flutes) shall match the spacing of the bottom main reinforcement steel, except on curved girder structures and in the areas of bridge decks with a flared rebar pattern. In these locations, the pitch of the flutes may be independent of the bottom main reinforcement spacing, and the forms may be dropped as necessary to achieve the minimum 1 inch concrete cover between the main reinforcement steel and the form. When the forms are dropped, additional dead load shall be accounted for in the design. Approval from the Engineer to drop the forms shall be obtained before construction of the deck begins.

b. Construction.

THE FOLLOWING IS ADDED AT THE END OF THE SECOND PARAGRAPH:

Joints between the forms should be lapped in the direction of concrete placement.

501.11 LIMITATIONS OF PLACING

THE SECOND SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO:

In no case, during mixing and placement, shall the temperature of the concrete be less than 60 or more than 90 degrees F.

501.12 PLACING CONCRETE

4. Deck Slabs.

THE FOLLOWING IS ADDED AFTER THE FIRST PARAGRAPH:

- a. **General Provisions.** The following provisions shall be adhered to in all concrete deck slab construction.

THE 21st PARAGRAPH IS CHANGED TO:

When the concrete placing within any complete unit (i.e., for trusses, arches, continuous or cantilevered unit) is to be divided, the placing shall be made and finished in the numbered sequence shown, beginning with the lowest number. All sections having the same number shall be placed before sections of higher number. The sequence of placing for sections having the same number shall be optional. No deck section shall be placed until all previously placed concrete within the complete unit has cured for 72 hours. This requirement may be waived if the succeeding section(s) can be completed within four hours after the start of the initial placement of section(s) of any given unit for that day. A written request to waive this requirement shall be submitted to the Engineer for approval. This requirement may not be waived for deck slabs on prestressed concrete beams that are continuous for live load. The numbered sequence shown on the Plans shall be adhered to

15. Pumped Concrete.

THE FOLLOWING IS ADDED:

As per the provisions of 914.04, fresh mixed concrete shall be sampled according to the requirements of AASHTO T 141. Samples shall be taken at the discharge of the concrete pump. If the Engineer believes that this is not a feasible, the pump shall be calibrated to calculate slump and air entrainment losses. These losses shall be deducted from the values as sampled from the concrete truck.

18. Slip-form Method of Parapet Construction.
THIS SUBPART NUMBER IS CHANGED TO:

17. Slip-form Method of Parapet Construction.

19. Corrosion Inhibitor Admixture.
THIS SUBPART NUMBER IS CHANGED TO:

18. Corrosion Inhibitor Admixture.
PARAGRAPH C IS DELETED.

20. Pressure Injection.
THIS SUBPART NUMBER IS CHANGED TO:

19. Pressure Injection.

501.15 DECK SLAB SURFACE TEXTURE FINISH

THE FIRST PARAGRAPH AND SUBPART 1 ARE CHANGED TO:

The surface of the deck slab shall be finished according to Subsection 405.13 except that Subpart G shall not apply. The time between strike-off and application of deck slab surface texture finish in any location shall not exceed one hour. All concrete bridge deck slabs shall be textured with a stiff, coarse broom and shall be saw cut groove finished as follows:

1. **Broom Finish.** Immediately after finishing has been completed, the surface shall be given a texture with an approved stiff, coarse broom.

The broom shall be operated in a longitudinal or transverse direction. Once begun, the direction of texturing shall not be changed. Transverse texturing shall be done from a work bridge.

The broom finish shall be applied so as to prevent ridges or gouges from forming in the concrete surface. The broom shall be weighted and the contact area changed as required to produce a uniform texture. The broom shall be cleaned periodically to remove all hardened concrete particles. Texture resulting from the broom shall stop within 1 foot of curbs.

3. **Saw Cut Grooved Surface.**

THE SECOND PARAGRAPH IS DELETED.

501.16 CONCRETE DECK SURFACE REQUIREMENTS

B. Control Testing.

THIS SUBPART IS CHANGED TO:

Deck slab surfaces shall be checked during placement to correct surface irregularities while the concrete is in workable condition.

Such control testing shall be performed as follows:

After strike-off, the deck surface shall be checked with an aluminum straightedge having a minimum length of 10 feet, as provided by the Contractor. The Resident Engineer shall determine the specific conduct of the control testing, including the number and location of straightedge checks. Surface variations shall be corrected before the concrete sets. Major deviations shall be corrected by the finishing machine or other strike-off, while minor deviations may be corrected by a straightedge or float. The addition of water to the surface of the concrete to assist in finishing operations will not be permitted.

THE FIRST PARAGRAPH IN SUBPART C IS CHANGED TO:

- C. **Acceptance Testing.** Conformance to the surface tolerance for concrete deck slabs will be determined in lots, each being equal to the length of deck in one span or continuous span. The longitudinal limits of the lot will be bounded by the expansion joints or fixed structural deck joints. The full length of the lot will be tested through any construction joints within the deck, whether these joints are required for the placement sequence or caused by the Contractor's operations. Such lot quantity will be calculated using the specified nominal deck thickness and excludes the quantity of concrete placed in haunches, end dams, and diaphragms. For the second course of the two-course deck slab construction, such lot quantity will be calculated using the specified nominal thickness of the concrete overlay protective system.

501.17 CURING AND PROTECTING CONCRETE

A. Curing Concrete Under Normal Conditions.

THIS SUBPART IS CHANGED TO:

Concrete decks, curbs, and tops of sidewalks for one-course deck slab construction shall be cured according to Subheading 4 of Subsection 405.14 with the exception that the minimum wet cure period shall not be less than seven calendar days. The burlap shall be kept continuously wet throughout this curing period. According to the provisions of Subheading 3 of Subsection 405.14, the wet burlap shall be covered with white polyethylene sheeting for the seven-day duration. The polyethylene sheeting shall be lapped at the joints and secured to the deck as tightly as possible. In two-course deck slab construction, the Contractor shall prepare the entire deck surface area according to Subheading 6 of Subpart C of Subsection 518.06 before placing the second course. The second course shall be cured according to Subsection 518.06 C.12.

The time between final finishing and application of the wet burlap shall not exceed 20 minutes in any location within the placement area.

Other concrete structures and concrete surfaces to receive an epoxy coating, rubbed finish or to be covered with another material shall be cured according to Subheadings 2, 3, 4, and 5 of the sixth paragraph of Subsection 405.14.

501.25 METHOD OF MEASUREMENT

THE 8TH PARAGRAPH IS DELETED.

501.26 BASIS OF PAYMENT

THE 19TH PAY ITEM IS CHANGED TO:

<u>Pay Item</u>	<u>Pay Unit</u>
SAWCUT GROOVED DECK SURFACE	SQUARE FOOT

THE 20TH PAY ITEM IS DELETED.

THE FOLLOWING IS ADDED:

In the construction of deck joint systems, no separate payment will be made for supplying and installation of steel armoring that is to be placed on the roadway side of the header. Such cost shall be included in the bid price for the Pay Item "Concrete in Substructures, Abutment Walls".

As detailed on the plans, the cost for providing the subbase outlet drain shall be included in the price bid for the Approach Slab item. Cost of subbase shall be included in the Approach Slab item.

SECTION 502 – PRESTRESSED CONCRETE STRUCTURES

THE TITLE OF THIS SECTION IS CHANGED TO:

SECTION 502 – PRECAST/PRESTRESSED CONCRETE STRUCTURES

502.01 DESCRIPTION

THE FOLLOWING IS ADDED:

The use of precast concrete end sections, including headwalls and wingwalls, is permitted. However, precast end sections for precast concrete culverts shall not be used when the skew angle requires that the smallest side of the precast concrete culvert segment is less than 3 feet. In such cases, cast-in-place end sections shall be provided. Adequate provisions shall be made for cast-in-place appurtenances, such as end sections, headwalls, wingwalls, aprons, and cut-off walls. Such provisions shall include proper transition of the precast culvert unit section into the cast-in-place appurtenance section. If the sections do not align, both the cast in place appurtenance and precast culvert unit section shall be redesigned and properly detailed.

502.15 STORAGE, TRANSPORTATION AND ERECTION

THE FOLLOWING IS ADDED TO THE NINTH PARAGRAPH:

Additionally, the requirements stated in Subsection 503.07 B. shall be followed for the erection process.

All exposed mild steel stirrups shall receive two coats of zinc rich paint.

502.17 BASIS OF PAYMENT

THE FOLLOWING IS ADDED TO THE LAST PARAGRAPH:

Payment for the use of plain elastomeric bearing pads shall be included in the price that is bid for the prestressed concrete beam type that is to be used in the project. Payment for the use of other type bearing assemblies shall be according to the provisions of 503.18.

No separate payment will be made for mild steel reinforcement in prestressed beams. All costs shall be included in the prestressed beam item.

SECTION 503 - STEEL STRUCTURES

503.07 SHIPPING, HANDLING AND ERECTION

B. Erection.

THE FOLLOWING IS ADDED TO THE FIRST LIST, ITEM 2:

The written plan shall be signed by a Professional Engineer licensed in the State of New Jersey. The Contractor's Professional Engineer and the State's Design Engineer shall attend the meeting.

SECTION 504 - TIMBER STRUCTURES

504.03 CONSTRUCTION REQUIREMENTS

THE FOURTH PARAGRAPH IS DELETED.

SECTION 505 - LOAD BEARING PILES

505.03 EQUIPMENT

B. Impact Pile Drivers.

SUBPART 3 IS CHANGED TO:

3. For steam or air hammers, the weight of the ram shall be no less than 1/3 the weight of the pile. For diesel hammers, the weight of the ram shall be no less than 1/4 the weight of the pile.

E. Leads and Followers.

THE FOLLOWING IS ADDED AFTER THE SECOND SENTENCE:

Leads may be either of the fixed or swinging type. Fixed leads, when used, shall be held in position by guys or braces to ensure support to the pile during driving. Swinging leads, when used, shall be fitted with a pile gate at the bottom of the leads and, in the case of battered piles, a horizontal brace may be required. Swinging leads shall be adequately embedded in the ground or the pile constrained in a structural frame such as a template to maintain alignment.

G. Hammer Cushion (Cap Block) and Pile Cushion.

1. Hammer Cushion.

THE SECOND AND THIRD SENTENCES ARE CHANGED TO:

Hammer cushions (cap block) shall be made of manufactured materials according to the hammer manufacturer's guidelines. Wood, rope, wire rope, hose, tires and asbestos cushions are specifically disallowed and shall not be used.

505.04 PREPARATION FOR DRIVING

THE FOLLOWING IS ADDED:

4. **Installation Sequence.** The order of placing individual piles in pile groups shall be either starting from the center of the group and proceeding outwards in both directions or, starting at an outside row and proceeding progressively across the group.

505.06 METHODS OF DRIVING

1. Accuracy of Driving.

THE FIRST SENTENCE IS CHANGED TO:

Foundation and fender piles shall be driven with a variation of not more than 1/4 inch per foot from the vertical or from the batter. Foundation piles shall not be out of the required position by more than 6 inches after driving, or 1/4 of their diameter, whichever is greater.

THE FIRST PARAGRAPH OF SUBPART 4 IS CHANGED TO:

4. **Test Piles.** Test piles of the specified materials, dimensions, and at the designated locations shall be furnished and driven with an impact hammer unless specifically stated otherwise in the Special Provisions or on the Plans. In general, lengths of test piles will be greater than the estimated length of production piles to provide for variation in soil conditions. The driving equipment and procedure (criteria) used for driving test piles shall be identical to that which the Contractor proposes to use on the production piles. The Contractor shall excavate the ground at each footing location to the elevation of the bottom of the footing before the pile is driven.

THE FOLLOWING IS ADDD TO THIS SUBSECTION:

The Contractor is specifically advised that it will be necessary to employ alternative techniques to place and drive the sheet piling and outermost two rows of piles at each abutment due to the proximity of the relocated power lines. The closest conductor on the west side of the road will be located at 33 feet from centerline. The closest conductor on the east side of the roadway will be located at 33 feet from centerline. The elevation of the lowest conductors will be 41, placing them approximately 35 feet above the proposed grade. Therefore, it may not be possible and it should not be anticipated that the piles and sheeting can be initially set from an overhead support arrangement using pick points at the ends of the sheeting and piles. The Contractor shall anticipate using alternate methods to set the sheeting and piles which are in close proximity to the overhead power lines.

The use of alternate equipment such as hydraulic sheeting installation machinery or vibratory side grip hammers such as those manufactured by Hercules, may be necessary. Once the proposed batter is set on the piles, the top of the piles will be approximately 30 feet from the nearest conductor, allowing the use of conventional dynamic pile driving equipment. Therefore, it may be necessary to use a vibratory type hammer to initially set the piles on their batter and then continue driving with conventional dynamic pile driving equipment. If alternative methods are used to set the piles to their proposed batter initially, the pile driving must commence no later than 30 minutes after the initial setting. Sheeting in conflict with the overhead lines may have to be spliced.

505.07 DETERMINATION OF BEARING VALUES

THE FIRST PARAGRAPH IS CHANGED TO:

Test piles of the materials and dimensions specified and lengths directed shall be furnished. Test piles shall be driven with the same type of equipment that is used for driving production piles. Test piles shall be driven at the designated locations to the bearing capacity and tip elevation that is shown on the Plans. The Engineer shall be the sole judge in determining bearing capacity and the length of pile to be driven.

Dynamic Pile Load Tests shall be used for this project.

SUBPART 2. IS CHANGED TO:

1. **Empirical Pile Formula.** If no other methods of determining pile capacity are stated in the Special Provisions or Plans, then the ENR formula shall be used.
4. **Dynamic Pile Load Tests.**

THE THIRD SENTENCE OF THE FIFTH PARAGRAPH IS CHANGED TO:

The restrike should be terminated when the ultimate capacity of the pile is reached or the penetration reaches 6 inches or the total number of hammer blows reaches 50, whichever occurs first.

505.11 MANUFACTURE OF PRECAST CONCRETE PILES AND PRECAST CONCRETE PILE CAPS

THE THIRD PARAGRAPH IS CHANGED TO:

Concrete piles for use in seawater and sulfate soils shall be cured for not less than 30 days before being used.

505.12 EXTENSIONS AND SPLICES

B. Precast and Prestressed Concrete Piles.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS CHANGED TO:

After the driving is completed, the concrete at the end of the pile shall be cut away leaving the reinforcing steel exposed for a length of 40 diameters.

505.13 CUT-OFFS AND CAPPINGS

THE SECOND PARAGRAPH IS DELETED.

THE THIRD PARAGRAPH IS CHANGED TO:

As shown on the Plans, all piles shall be anchored to the structure.

505.15 METHOD OF MEASUREMENT

THE 10TH PARAGRAPH IS CHANGED TO:

Splices for all type piles will be measured per each individual splice. However, splices within the pile length ordered by the Engineer will not be measured unless the ordered length is in excess of 80 feet.

505.16 BASIS OF PAYMENT

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

No separate payment will be made for the use of alternative pile driving equipment to set the sheeting or initially set the piles or for sheeting splices. All costs shall be included in the unit prices bid for the various sheet piling, cofferdam and bearing pile items.

SECTION 510 - PUBLIC UTILITIES IN STRUCTURES

510.01 DESCRIPTION

THE TEXT OF THIS SUBSECTION IS DELETED AND REPLACED AS FOLLOWS:

This work shall consist of installing temporary and permanent utility supports for the Verizon conduits and the PSE&G gas main.

510.02 MATERIALS

THE LAST PARAGRAPH OF THIS SUBSECTION IS DELETED.

THE FOLLOWING IS ADDED:

Materials for the permanent utility supports shall be as indicated on the construction plans. Roller supports for the gas main and telephone conduit cradles will be supplied by the respective utility companies. All metal components supplied by the utility companies shall be hot dip galvanized according to ASTM A 123 or A 153.

Materials for the temporary utility supports shall be as agreed upon by the Contractor and the respective utility company.

510.03 CONSTRUCTION REQUIREMENTS

ALL PARAGRAPHS OF THIS SUBSECTION ARE DELETED AND REPLACE AS FOLLOWS:

Permanent utility support brackets shall be installed pursuant to the construction plans. The steel bracket assemblies shall be fabricated and installed by the Contractor. The Contractor shall also install the roller chair supports and cradle supports provided by the utility companies. PSE&G will be responsible for installing the gas main and Verizon will be responsible for installing the permanent conduits.

Temporary utility supports shall be designed to the satisfaction of the utility company whose facility is being carried.

It is anticipated that the Contractor will install the temporary utility supports for the Verizon conduits during Stage 2 construction. The temporary utility supports shall be set such that the telephone conduits can be relocated to their proposed offset and elevation as a one time permanent relocation. During construction of the bridge, the permanent utility support brackets will be installed with the conduits in place, and, once all the permanent utility support brackets are in place, the temporary utility supports will be removed.

Depending upon out of service limitations and construction operations, the existing gas main may be supported beneath the existing bridge structure during Stages 1 and 2 construction. Prior to Stage 3 construction, the Contractor shall install the temporary utility supports for the gas main. The supports shall be installed such that the gas main can be relocated to its proposed line and grade as a one time relocation. The permanent utility support bracket shall be installed with the gas main in its relocated position. After installation of the utility support brackets and roller chairs, the temporary utility support can be removed.

510.04 METHOD OF MEASUREMENT

THE TEXT OF THIS SUBSECTION IS DELETED AND REPLACED AS FOLLOWS:

Utility support brackets will be measured by the unit, representing all work and materials necessary to fabricate and install one utility support bracket.

Temporary utility supports will be measured by the unit. Each unit represents all materials and work necessary to install the temporary supports for each run of each utility.

510.05 BASIS OF PAYMENT

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

<i>Pay Item</i>	<i>Pay Unit</i>
UTILITY SUPPORT BRACKETS	UNIT
TEMPORARY UTILITY SUPPORTS	UNIT

The pay item "Temporary Utility Supports" shall include all costs of design, materials and work required to install and remove the supports. The installation of all temporary utility supports for the Verizon conduits shall represent one unit. The installation of all supports necessary to support the existing gas main from the existing bridge shall constitute one unit. The installation of all temporary utility supports to support the gas main on its proposed line and grade shall constitute one unit.

SECTION 513 – SHEETING, TEMPORARY AND LEFT IN PLACE

513.01 DESCRIPTION

THE FOLLOWING IS ADDED:

This work shall also consist of the design, construction and maintenance of a temporary retaining wall at locations indicated in the construction plans.

513.02 MATERIALS

THE FOLLOWING IS ADDED:

The temporary retaining wall shall be the Terratrel™ temporary wire face retaining wall or equal approved by the Engineer.

Terratrel™
The Reinforced Earth Company
8614 Westwood Center Drive, Suite 1100
Vienna, VA 22182-2233
Tel: (703) 821-1175 Fax: (703) 821-1815

Materials shall be as specified in Subsection 513.04.

THE FOLLOWING IS ADDED:

Temporary Retaining Wall

A. DESIGN REQUIREMENTS

The design by the wall system supplier shall consider the internal stability of the reinforced soil mass and shall be in accordance with acceptable engineering practice and these specifications. The design life of the structure shall be 3 years.

1. Design Height:

The structure's design height, H, shall be from the bottom of the wire facing to the top of the wall where the ground surface intercepts the wall facing.

2. Soil Reinforcement Length:

The soil reinforcement length shall be the same length from top to bottom of wall. The minimum soil reinforcement length shall be as required to achieve a minimum width of structure B, measured from the front face of the wall to the end of the soil reinforcements, greater than or equal to 70 percent of the design height, H. The minimum reinforcement length shall be 8.0 ft.

3. Inclination of Failure Surface:

A bilinear failure surface shall be assumed in design passing through the base of wall behind the facing to a point 0.3H behind and 0.5H above the base of wall and shall be assumed vertical above this point to the ground surface.

4. Design Parameters:

The following soil parameters shall be assumed for the design unless otherwise shown on the plans or specified by the Engineer.

Reinforced fill: unit weight = 120 pcf, $\phi = 34^\circ$, $C = 0$
Random backfill: unit weight = 120 pcf, $\phi = 30^\circ$, $C = 0$
Foundation soils: unit weight = 120 pcf, $\phi = 30^\circ$, $C = 0$

5. Minimum Factors of Safety for Internal Stability:

- Reinforcement yield: FS = 1.5
- Reinforcement pullout in soil: FS = 1.5 against 0.5 inch deformation.
- The maximum allowable reinforcement tension shall not exceed two-thirds of the pullout resistance determined at 0.5 inch deformation.
- Connection of reinforcements to facing units: The maximum allowable reinforcement tension shall not exceed one-half of the ultimate breaking load of the connection.

6. Minimum Factors of Safety for External Stability:

- Sliding of the mass: FS = 1.5
- Overturning of the mass: FS = 2.0

7. Allowable Reinforcement Tension:

The allowable reinforcement tensile stress shall not exceed 55 percent of the yield strength of the steel (i.e. FS = 1.5 against yield).

8. State of Stress:

The lateral earth pressure to be resisted by the reinforcements at each reinforcement layer shall be calculated using the appropriate coefficient of earth pressure, K, times the vertical stress at each reinforcement layer. The vertical soil stress at each reinforcement layer shall consider the local equilibrium of all the forces acting above the layer under investigation, and shall be computed using the Meyerhof bearing pressure equation. The coefficient of earth pressure, K, shall vary from an at-rest earth pressure coefficient, K_0 , at the ground surface and shall decrease linearly to an active earth pressure coefficient, K_a , at a depth of 20 feet. The coefficients of earth pressure shall be based on level top conditions and shall be independent of surcharge slope.

B. MATERIALS

The Contractor shall make his own arrangements to purchase the materials covered by this section of the specifications.

1. *Wire Facing, Soil Reinforcements and Attachment Devices:*

- a) Wire Facing and HA Ladder Reinforcing: Wire facing and HA ladders (where applicable) shall be shop fabricated of cold drawn steel wire conforming to the minimum requirements of AASHTO M-32 (ASTM A-82) and welded into the finished configuration in accordance with AASHTO M-55 (ASTM A-185). The tie plate for ladder reinforcing shall conform to the physical and mechanical properties of (ASTM A-570, Grade 50 steel).
- b) Reinforcing strips (where applicable) shall conform to the physical and mechanical properties of ASTM A-572M, Grade 65 steel.
- c) Hair Pin Connectors and Connector Bars: Hair pin connectors and connector bars shall be fabricated from cold drawn steel conforming to the minimum requirements of AASHTO M-32 (ASTM A570, Grade 50 steel).
- d) Connector Bars: Connector bars shall be fabricated from cold drawn steel wire conforming to the minimum requirements of ASTM A-615, Grade 60 steel.
- e) Bolt Sets: Bolt sets shall conform to the physical and mechanical properties of ASTM A-325M.

2. *Retention Fabric:*

When shown on the plans, retention fabric shall be placed within the reinforced fill as indicated. Retention fabric shall be woven monofilament polypropylene fabric, such as Carthage Mills 15%, as supplied by The Reinforced Earth Company or equal.

3. *Reinforced Backfill:*

Reinforced backfill shall conform to the following gradation limits as determined by AASHTO T-27 (ASTM D-422).

Reinforced Backfill	
Sieve Size	Percent Passing
4 inches	100
No. 4	0-60
No. 200	0-15

In addition, the Plasticity Index (P.I.), as determined by AASHTO T-90 (ASTM D-4318), shall not exceed 6. The Contractor shall furnish to the Engineer, a Certificate of Compliance certifying that the reinforced backfill materials comply with this section of the specifications. A copy of all test results performed by the Contractor, which are necessary to assure compliance with the specifications, shall also be furnished to the Engineer. Backfill not conforming to this specification shall not be used without the written consent of both the State and the wall supplier.

C. CONSTRUCTION

1. *Foundation Preparation:*

Prior to wall construction, the foundation, if not in rock, shall be compacted as directed by the Engineer. Any unsuitable foundation material, as determined by the Engineer, shall be excavated and replaced with granular material, and shall be compacted in accordance with Section 4.5 Backfill Placement.

2. *Wall Erection*

The wall system components shall be constructed in accordance with the wall system supplier's recommendations and construction manual. The wall shall be constructed vertical or as near vertical as the wall system will allow. The overall vertical tolerance of the wall and the horizontal alignment tolerance shall not exceed 3 inches per 10 feet.

3. *Backfill Placement:*

Backfill placement shall closely follow erection of each course of wire facing units. Backfill shall be placed in such a manner as to avoid any damage or disturbance to the wall materials or misalignment of the facing. Any wall materials which become damaged or disturbed during backfill placement shall be either removed and replaced at the Contractor's expense or corrected as directed by the Engineer. Any misalignment or distortion of the wall elements due to placement of backfill outside the limits of this specification shall be corrected as directed by the Engineer.

Reinforced backfill shall be compacted to 95 percent of the maximum density as determined by AASHTO T-99 (ASTM D-698, Method C). Reinforced backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T-99 (ASTM D-698, Method C). The maximum lift thickness after compaction shall not exceed 10 inches, regardless of the vertical spacing between layers of soil reinforcements. The Contractor shall decrease this lift thickness, if necessary, to obtain the specified density.

Prior to placement of the soil reinforcements, the reinforced backfill elevation, after compaction, shall be 2 inches above the connection elevation from a point approximately 24 inches behind the facing to the free end of the soil reinforcements, unless otherwise shown on the plans.

Compaction within 3 feet of the facing shall be achieved by at least three (3) passes of a lightweight mechanical tamper, roller or vibratory system. No soil density tests need be taken within this area. Care shall be exercised in the compaction process to avoid misalignment of the facing. Heavy compaction equipment shall not be used to compact backfill within 3 feet of the wall face. At the end of each day's operation, the Contractor shall slope the last level of backfill away from the wall facing to direct runoff of rainwater away from the wall face. In addition, the Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

4. *Toe Protection:*

The toe of the wall shall be embedded in accordance with the shop drawings and shall be protected as required for the life of the structure to avoid undermining the wall face.

513.05 METHOD OF MEASUREMENT

THE FIRST PARAGRAPH IS REMOVED AND THE FOLLOWING IS ADDED:

Temporary sheeting will be measured by the square foot basis. The area measured will be the product of the average height and the length of sheeting that is driven. The average height will be determined by extending a line from the bottom of excavation to a vertical plane of the top of sheeting.

Temporary Retaining Wall will be measured by the square foot basis. The area measured will be the product of the average height and the length of the wall. The average height will be determined by extending a line from the ground outside of the wall to the top of the wall.

513.06 BASIS OF PAYMENT

THE FOLLOWING PAY ITEM IS ADDED:

<u>Pay Item</u>	<u>Pay Unit</u>
TEMPORARY RETAINING WALL	SQUARE FOOT

SECTION 524 – PRECAST DECK PANELS

524.01 DESCRIPTION

This work shall consist of the design and installation of precast deck panels, as indicated on the construction plans.

524.02 MATERIALS

The precast deck panels shall be precast and shall be the Effideck System or equal approved by the Engineer.

Effideck
The Fort Miller Company Inc.
P.O. Box 98
Schuylerville, NY 12871
Tel: (518) 695-5000

All material shall comply with the manufacturer's requirements and specifications.

524.03 WORKING DRAWINGS

Working drawings shall be furnished according to Subsection 105.04. All designs shall comply with current NJDOT practices.

Any non-propriety materials specified by the fabricator shall comply with NJDOT requirements.

524.04 CONSTRUCTION

All deck panels shall be installed pursuant to the fabricator's best recommended procedures and practices.

Non-proprietary items shall be constructed pursuant to the appropriate subsections of the construction specifications or as otherwise directed by the fabricator.

Based on the age of the existing steel beams, welding shear studs is not permitted; follow details in the construction plans.

The Contractor is advised that the panels will have to be set beneath live electric lines and shall plan the design and installation of the panels accordingly with equipment which will not violate high voltage clearance requirements.

The Contractor shall attempt to match the elevations of the bridge deck adjacent to the panels. However, the Contractor may construct an overlay on the panels pursuant to the construction plans if this is not practical. The overlay shall meet the minimum thickness requirements of the specified material

524.05 METHOD OF MEASUREMENT

Precast panels will not be measured.

524.06 BASIS OF PAYMENT

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
PRECAST PANELS	LUMP SUM

The pay item "Precast Panels" shall include all design, materials and work required to install the precast deck panels. Separate payment will not be made for any overlay materials and all costs shall be included in the item "Precast Panels".