**SOUTHERN INDUSTRIAL DRIVE ROADWAY IMPROVEMENTS**
**ROADWAY AND DITCHLINE CONSTRUCTION**
**NEW RIVER GORGE REGIONAL DEVELOPMENT AUTHORITY**
**BEAVER, WEST VIRGINIA**
**TECHNICAL SPECIFICATIONS**

## 1.0 SCOPE OF WORK

The work consists of the construction of approximately 3,100 linear feet of access roadway, an adjacent drainage ditch, excavation, grading and stabilization.

The major work items are:

- Roadway reconstruction and widening, including full-depth asphalt pavement (base, intermediate, and wearing courses).
- Aggregate base course (WVDOH Section 307).
- Storm drainage pipe, end treatments, and drainage structures (WVDOH Section 604).

The access roadway is approximately 3,100 linear feet in length requiring excavation, compaction and placement of coarse aggregate, base course asphalt and wearing course asphalt. The adjacent ditch will need to be excavated and stabilized as shown on the plans.

The work includes furnishing all labor, materials, equipment, services, support facilities, and operations required to complete all work indicated above and related work as indicated on and in the construction documents.

All Contractors are responsible for coordination with other Contractors to prevent unnecessary delays or damage to the existing property or on-going work.

## 1.1 CONTRACT DRAWINGS

The following Construction Drawings are part of the Contract Documents:

| Figure No. | Drawing No. | Description |
|---|---|---|
| 1 | 25-007-D1 | Existing Conditions Plan (Sheet 1 of 2) |
| 2 | 25-007-D2 | Existing Conditions Plan (Sheet 2 of 2) |
| 3 | 25-007-D3 | Overall Road Plan |
| 4 | 25-007-D4 | Proposed Grading Plan (Sheet 1 of 2) |
| 5 | 25-007-D5 | Proposed Grading Plan (Sheet 2 of 2) |
| 6 | 25-007-D6 | Proposed Road Profile |
| 7 | 25-007-D7 | Proposed Road Sections |

| | | |
|---|---|---|
| 8 | 25-007-D8 | Details |
| 9 | 25-007-D9 | Striping and Sign Plan |

## 1.2 SAFE OPERATING CONDITIONS

The Contractor shall be solely responsible for the manner, management, means, methods, sequences, procedures, and techniques necessary to perform the work in a safe manner. All site safety is the responsibility of the Contractor. The Contractor shall comply with all OSHA rules, and all other local, state, and federal rules and regulations regarding safety as they relate to all construction activities on the site. Contractor shall present proof of workers compensation insurance valid in the state of West Virginia. The Contractor is responsible at all times for providing Traffic Control measures in accordance with the WVDOH Standards and shall maintain access to the existing asphalt plant within the Industrial Park,

## 1.3 DELIVERIES, STORAGE, AND UNLOADING

All deliveries shall be coordinated with Owner which are not specifically addressed in the contract documents. Owner will cooperate with Contractor as appropriate and reasonably necessary in Contractor's scheduling delivery of materials to the site.

Contractor shall be solely responsible for receiving, unloading, handling, and storing all materials for the work upon delivery to the site at Contractor's sole cost, expense, risk and account.

## 1.4 USE OF PREMISES

Contractor shall comply with and enforce the rules and requirements of Owner and all applicable laws, regulations, ordinances, and permit conditions with reference to deliveries, storage of equipment, and/or material, enclosures, barriers and signs.

Contractor shall conduct its operations at the premises in such a manner as to cause a minimum of inconvenience or disturbance to, or interference with, the normal and uninterrupted utilization of existing premises, facilities, business operations, and services adjacent to or in the vicinity of the premises including the asphalt plant. Operations which could prevent access thereto, interrupt, restrict or otherwise infringe upon utilization or business operation thereof shall be coordinated with Owner and other Contractors prior to initiation of such operations. Contractor shall assure free, convenient, unencumbered, and direct access to the existing asphalt plant as well as properties neighboring the Site for owners of such properties and their prospective tenants, agents, invitees, and guests. Contractor shall take these measures into account when preparing the bid, estimating the tentative construction schedule, and developing the strategy for routing construction equipment and traffic control plans.

1.5 HOUSEKEEPING

Contractor shall maintain the Site and all roadways utilized in a reasonably clean and orderly condition. Contractor shall perform cleanups when necessary or as ordered by Owner. In no event shall cleanups be performed less frequently than once per week.

**END OF SECTION 1.0**

## 2.0 MOBILIZATION / DEMOBILIZATION

### 2.1 GENERAL

This item consists of delivery to, and assembly at, the Site, of all equipment, tools, machinery, and supplies comprising the construction plant, its use during construction, and its removal after completion of the work, bonds, insurance, and other fixed costs incidental to this work. The contractor shall be responsible for all setup, temporary sanitary facilities, and incidentals such that the bid prices for the construction items reflect actual work necessary.

### 2.2 MEASUREMENT AND PAYMENT

The work under this item shall be measured on a lump sum basis and payment shall be made at the Contract Unit Price bid for Item 2.1, "Mobilization/Demobilization," which price and payment shall constitute full compensation for all work, including incidentals necessary to complete this item. Payment shall be made at 75 percent of the lump sum price bid upon completion of mobilization and 25 percent upon demobilization, as determined by the Engineer. **The total bid price for this item must not exceed 10% of the total project bid.**

### 2.3 PAY ITEMS

Item 2.1, "Mobilization/Demobilization," per lump sum.

**END OF SECTION 2.0**

## 3.0 EROSION AND SEDIMENTATION CONTROLS

### 3.1 GENERAL

3.1.1 Work covered in this section shall consist of providing and installing temporary erosion and sediment controls for disturbed drainage areas within and adjacent to the construction area. These erosion and sediment controls include silt fences and silt sock and other sedimentation barriers such as the stabilized construction entrance. Any temporary erosion and sediment controls described in these Technical Specifications and shown on the Construction Drawings shall be installed prior to any earth disturbance activities.

3.1.2 The Contractor shall conduct the earthwork and excavation activities in such a manner to fit the topography, soil type, and condition.

3.1.3 The Contractor shall minimize disturbed areas, duration of disturbed areas to exposure of erosion elements, stabilize disturbed areas immediately, retain on-site sediment that was generated on-site, and minimize encroachment upon watercourses.

3.1.4 All construction activities shall comply with federal, state, and local soil and water conservation guidelines.

3.1.5 In general, the Contractor shall provide temporary and permanent erosion and sediment control procedures directed toward:

- Preventing soil erosion at the source;
- Preventing silt and sediment from entering any waterway if soil erosion cannot be prevented; and,
- Preventing silt and sediment from migrating downstream in the event it cannot be prevented from entering the waterway.

### 3.2 MATERIALS

3.2.1 Temporary erosion and sediment controls shall consist of the following:

- Silt fence shall be SMARTFence 42 or equal.
- Silt sock shall be Filtrexx Siltsoxx or equal.
- Stabilized construction entrance

### 3.3 METHODS

3.3.1 The Contractor shall provide all materials and promptly take all actions necessary to achieve effective erosion and sediment control in accordance with all applicable federal, state, and local enforcing agency guidelines and these

Technical Specifications.

3.3.2 The work shown on the Construction Drawings shall be considered a minimum requirement. What is shown shall not relieve the Contractor of the responsibility to actively take all steps necessary to control soil erosion and sedimentation.

3.3.3 Additionally, the Contractor shall provide for storm water control within and along the construction areas to prevent and/or limit erosion and to prevent run-on into the existing, adjacent construction areas. The methods ultimately used to provide this control are the Contractor's responsibility. Suggested methods include temporary earthen and/or sandbagged berms, or shallow trenches. Regardless of the method chosen, all devices shall be sloped to drain. The method(s) chosen to control storm water should not prohibit timely construction.

3.3.4 Temporary erosion and sediment control devices such as silt fence or silt sock, shall be installed and maintained from the initial land disturbance activity until the satisfactory completion (established vegetation) of the construction areas has occurred.

3.3.5 Where permanent vegetation is not appropriate and where the Contractor's temporary erosion and sediment control practices are inadequate, the Engineer may direct the Contractor to provide temporary vegetative cover with fast growing seedlings. Such temporary vegetative cover shall be provided by the Contractor in compliance with Section 7.0 of these Technical Specifications, specifically, in the selection of species, planting dates, and application rates for seeding, fertilizer, liming (if required), and mulching.

3.3.6 All erosion and sediment control devices shall be inspected by the Contractor at least weekly and after each rainfall occurrence and cleaned out and repaired by the Contractor as necessary. Ditches with sediment accumulation shall be cleaned out. Dislodged silt fence shall be replaced with new materials promptly. Any collected sediment shall be disposed in a location approved by the Owner.

## 3.4 SEDIMENT BARRIERS

3.4.1 The construction under this section shall consist of the erection of sediment control barriers (silt fence or silt sock) down gradient of the work areas. Sediment barriers shall be placed along contours of constant elevation. Additional sediment control measures shall be added by the Engineer and/or Owner at the time of construction on an as-needed basis.

3.4.2 Sediment barriers shall be constructed according to the details shown on the Construction Drawings or as described herein prior to any construction activities.

Sediment barriers shall be kept free of accumulation of deleterious materials that would inhibit its function.

3.4.3 Posts used for sediment barrier installation shall be placed a maximum of 10 feet apart and shall be driven at least 15 inches into the ground. If using silt fence, the silt fence material shall be fastened securely to the upslope side of the posts. A 6-inch wide, 4-inch deep trench shall be excavated along the line of posts and upslope from the barrier.

3.4.4 All sediment barriers shall be removed when they have served their usefulness so as not to block or impede storm water flow or drainage.

## 3.5 SUBMITTALS

Silt fence or silt sock manufacturer's specifications and installation instructions.

## 3.6 MEASUREMENT AND PAYMENT

The work under this item shall be measured on a field-surveyed, unit price basis and payment shall be made at the Contract Unit Price bid for Item 3.1, "Sediment Barrier," per linear foot, which price and payment shall constitute full compensation for all work, including incidentals necessary to complete this item.

## 3.7 PAY ITEMS

Item 3.1, "Sediment Barrier," per Linear Foot.

**END OF SECTION 3.0**

## 4.0 EXCAVATION, GRADING AND BACKFILLING

### 4.1 GENERAL

Work covered in this section shall consist of furnishing the labor, tools, equipment, incidentals, support facilities, and services necessary to provide traffic control and to complete the excavation of the stone and earthen materials in the roadway, including structural backfill, excavation from borrow area and excess spoil hauling and placement, if necessary for construction of the roadway, as indicated on the Construction Drawings and as detailed in the Technical Specifications.

4.1.1 The Contractor shall be responsible at all times for carrying out all operations in a safe and prudent manner so that the workmen, public, and adjacent public and private property will be protected from hazards. Where needed or required, excavations shall be adequately sheeted and braced. Where the installation of sheeting is impractical or may cause damage, the Contractor shall utilize other methods approved by the Owner and/or the Engineer. In cases where excavation is not permissible solely because of protection to workmen, trench boxes may be used in accordance with all OSHA safety requirements.

4.1.2 Contractor shall provide traffic control, if necessary, and maintain access to the site during construction. Traffic Control shall be in accordance with the WVDOH Standards. Traffic Control will be paid at the Lump Sum Bid Price as Item 9.1.

4.1.3 Excavation will proceed to elevations and dimensions shown on the Construction Drawings, and shall be extended a sufficient distance to permit placement and inspections, as needed.

4.1.4 All debris and loose material located below excavation grade shall be removed and replaced with suitable material. Excavations not required by the Construction Drawings shall be replaced with suitable material at no additional cost to the Owner. Excavated material suitable for reuse in the work may be temporarily stockpiled in areas identified and approved by the Engineer.

4.1.5 Excavations shall be dewatered when necessary and kept free from water during construction. Special care shall be taken not to disturb the bottom of the excavation before any overlying material is placed.

4.1.6 Existing and finished grades are indicated on the Construction Drawings. Finished excavation grades shall be within plus or minus 0.1 foot of the excavation grades shown on the Construction Drawings.

4.1.7 Owner reserves the right to vary the finished grade elevations, as required to maintain the general grading plan, to maintain proper drainage or to meet any unforeseen conditions that may arise at the site, without resulting in a

claim for additional costs.

4.1.8 The excavation shall terminate at the proposed grades, unless otherwise directed by the Engineer.

4.2 MATERIALS

4.2.1 Structural fill shall consist of suitable onsite material located within the excavation, an onsite borrow area or offsite soil obtained from a permitted offsite borrow area. Soil structural fill shall have a maximum particle size of 6 inches and be free of organics. Soil structural fill materials shall be approved by the Engineer prior to use.

4.2.2 Miscellaneous/unsuitable material is defined as material possessing one or more of the following characteristics: soft, very wet, organic, acidic, highly fractured, friable, mottled, and pumps or ruts excessively. The use of this material is very limited and shall be removed from the site.

4.3 METHODS

4.3.1 Grading and placement of the structural fill to develop the subgrade shall conform to these Technical Specifications.

4.3.2 Grade stakes shall be set at breaks in grade, along swales, and as required for proper grading of the construction site. Before commencing construction operations, the Contractor shall stake out contract limit lines, as required to perform the work. The Contractor shall maintain base lines and bench marks, and establish and maintain new bench marks required for his operations.

4.3.3 The Contractor shall repair and reestablish grades in settled, eroded, rutted or otherwise damaged areas. In damaged compacted areas, the Contractor shall scarify the surface and reshape and compact the required density prior to further construction.

4.3.4 The Contractor shall provide and maintain slopes, crown, and ditches on all excavations and embankments to ensure satisfactory drainage at all times.

4.3.5 Frozen material shall not be placed in fill materials nor shall fill be placed upon frozen materials. Previously frozen materials shall be removed before new fill material is placed. No fill material shall be placed, spread, or compacted while the ground or fill is frozen or thawing, or during unfavorable weather conditions.

4.3.6 Unless otherwise directed, excavations shall be backfilled as soon as possible after the work is reviewed, tested as required and accepted, and permission to

place the next layer of structural fill has been given by the Engineer.

4.3.7 Care shall be taken to locate and work around existing underground and aboveground utilities without damaging them. Any damage to these existing utilities shall be repaired by the Contractor at no cost to the Owner.

## 4.4 EXCAVATION

4.4.1 Excavation shall consist of removing existing asphalt pavement, stone, soil, rock, wet spoil, existing debris, boulders, weathered rock, and/or competent rock, when required. All the work required to achieve excavation grades, as shown on the Construction Drawings, shall be the Contractor's responsibility.

4.4.2 It is anticipated that excavation of existing site soil materials can be accomplished readily with conventional earth-moving equipment. However, ripping or hoe ramming of more resistant, weathered rock may be required.

4.4.4 The excavation will be performed in a manner that will afford adequate drainage and prevent off-site transport of sediment. Any existing wet areas in the work area shall be dewatered by the Contractor prior to placing overlying fill. Low lying areas shall be drained by pumping or other satisfactory methods to prevent deterioration of the excavation grade.

4.4.5 The finished excavation grade shall be protected from traffic or other operations and maintained in a satisfactory condition, by the Contractor, until the overlying structural fill is placed. Any finished excavation that is disturbed by the Contractor's operation, or adverse weather, shall be reworked prior to further construction.

4.4.6 If excavation encounters unsuitable materials such as that defined in Section 4.2.2 of this Technical Specification, the unsatisfactory material will be over-excavated until competent material is obtained. The excavated unsatisfactory material will then be hauled to an approved onsite spoil area.

4.4.7 Any over-excavation of material to depths below the lines and grades shown on the Construction Drawings, not classified as unsatisfactory material by the Engineer, shall be replaced with structural fill at no additional cost to the Owner.

4.4.8 In areas where existing grade is lower than the excavation grade, structural fill will be used to establish the lines and grades shown on the Construction Drawings.

4.4.9 Acceptable excavation grade requiring no structural fill to achieve grades shall be cleared of any vegetation and exposed material having a particle size greater than 6 inches.

4.4.10 Contractor shall excavate all existing asphalt, stone and earthen materials to the extent necessary to facilitate the installation of the roadway in existing paved or graveled areas, existing ditch lines and culverts. Contractor shall exercise care in the removal of these materials to minimize the affected area, while maintaining access to the site.

## 4.5 STRUCTURAL FILL PLACEMENT

4.5.1 Structural fill will be required to achieve base grades. Prior to structural fill placement, all vegetation shall be removed, including topsoil, root mat and material containing organics.

4.5.2 All structural soil fill shall be placed in maximum 6-inch compacted lifts and compacted to a minimum of 95 percent Standard Proctor maximum dry density, within plus or minus 2% of the optimum moisture content.

4.5.3 The construction quality control testing will be conducted by a third party and is the responsibility of the Contractor. Tests for determination of Standard Proctor maximum dry density and optimum moisture will be performed by the Contractor, in accordance with the requirements of ASTM D698, using samples representative of the materials to be placed. Results of these tests will be provided to the Owner and Engineer and shall be the basis of control of compaction.

4.5.4 The completed surface shall be smooth, firm, and free of loose debris. Any damaged areas shall be excavated and repaired at no additional costs to the Owner.

4.5.5 Excess material excavated from the project area and determined by the Owner to remain onsite shall be placed in areas as directed by the Owner. This material will be placed and worked in neat and orderly stockpiles with appropriate BMP's installed to prevent sediment from leaving the site.

## 4.6 MISCELLANEOUS EXCAVATION

4.6.1 Large organic materials such as stumps or limbs shall be removed offsite.

4.6.2 The Contractor shall avoid damaging any existing utilities, including underground and aboveground gas lines, sewer lines, water lines and power lines, within or adjacent to any work areas.

4.6.3 Restoration of existing property, utilities, or structures shall be done as promptly as practical, at the Contractor's expense.

## 4.7 GRADING

4.7.1 Remove and replace all soft or spongey areas with adequate subgrade soil material.

4.7.2 Remove all vegetation, debris, roots, branches, stones, in excess of ½ inch in size.

4.7.3 Place suitable topsoil material in areas where seeding is scheduled, placed during dry weather and in a dry state.

4.7.4 Once achieving final grades as indicated on the Contract Drawings, all areas shall be graded in such a manner to eliminate uneven and low spots.

4.7.5 Reference Section 7.0 of this Technical Specification for Revegetation Specifications and the Contract Drawings for final grades and stabilization practices.

4.7.6 The roadside drainage ditches excavation and grading are considered incidental to the earthwork as part of preparation of the subgrade.

## 4.8 MEASUREMENT AND PAYMENT

The work under this item shall be measured on a field-surveyed, unit price basis and payment shall be made at the Contract Unit Price bid for Item 4.1, "Excavation to Structural Fill," per cubic yard and Item 4.2, "Excavation to Spoil," per cubic yard, which price and payment shall constitute full compensation for all work, including incidentals necessary to complete this item.

## 4.9 PAY ITEMS

Item 4.1, "Excavation to Structural Fill," per cubic yard, and
Item 4.2, "Excavation to Spoil," per cubic yard.

**END OF SECTION 4.0**

## 5.0 ASPHALT PAVEMENT AND PAVEMENT MARKINGS

### 5.1 GENERAL

Work covered in this section shall consist of furnishing the labor, tools, equipment, incidentals, support facilities, and services necessary to complete the supply and installation of the stone aggregate base and hot-mix asphalt base course, binder and wearing course pavement, shoulder stone gravel, entrance gravel, pavement striping and markings, and signage as shown on the Construction Drawings.

### 5.2 MATERIALS

5.2.1 The 6-inch compacted crusher run stone layer materials and gradations shall be those that have performed satisfactorily in previous installations and meet all WVDOH Standard Specifications Roads and Bridges, latest edition.

5.2.2 The asphalt pavement shall be hot-mix asphalt mechanically mixed in a qualified manufacturer plant, registered and approved by authorities having jurisdiction or the DOT of the state, and composed of aggregate and asphalt material designed to conform to the West Virginia Division of Highways Standard Specifications Roads and Bridges, latest edition.

5.2.3 All striping, symbols, and pavement markings shall comply with WVDOH Standard Specifications Section 636 “Pavement Markings” (2024 Edition) and the latest Manual on Uniform Traffic Control Devices (MUTCD). Glass beads shall conform to AASHTO M247.

5.2.4 Signing shall conform to WVDOH Standard Specifications Section 715 “Sign Panels and Sign Posts.” Install R1-1 STOP signs using perforated square steel break-away posts.

### 5.3 METHODS – Stone and Asphalt Pavement and Striping and Signage

5.3.1 The stone base and asphalt pavement shall be placed in accordance with the West Virginia Division of Highways Standard Specifications Roads and Bridge, latest edition.

5.3.2 Subgrade preparation, installation, stone aggregate placing and compaction and base course paving and wearing course paving installation shall be performed with this contract.

5.4.3 Crusher run stone shoulders shall be installed along the roadway as shown on the Construction Drawings.

5.3.4 The Contractor shall lay out all markings and signage, obtain Engineer approval, and place markings only on clean, dry pavement at temperatures recommended by the material manufacturer.

5.3.5 The Contractor shall install the gravel entrances to North and South Boreman Lane and is included in the quantity for shoulder stone.

## 5.4 MEASUREMENT AND PAYMENT

Payment shall be made at the Contract Unit Bid Price for each item, which price and payment shall constitute full compensation for all work, including incidentals necessary to complete these items. Unit Bid Pricing in Tons are estimated and shall be in accordance with WVDOH standards. Estimates are as follows:

- Dense-graded HMA (Types I–IV) → 110 lb/SY-in ≈ 0.055 ton/SY-in
- Crusher-run or shoulder stone → 120 lb/SY-in ≈ 0.060 ton/SY-in

## 5.5 PAY ITEMS

Item 5.1, “Aggregate Base Course, Crusher Run,” per ton.
Item 5.2, “HMA Base Course, Type I (4 in.),” per ton.
Item 5.3, “HMA Base Course, Type II (2 in.),” per ton.
Item 5.4, “HMA Wearing Course, Type IV, PG 76-22 (2 in.),” per ton.
Item 5.5, “Shoulder Stone,” per ton.
Item 5.6, “Pavement Marking, 4 in. Double Yellow,” per linear foot.
Item 5.7, “Pavement Marking, 4 in. White Edge,” per linear foot.
Item 5.8, “Stop Sign,” per each.

**END OF SECTION 5.0**

## 6.0 CULVERT INSTALLATION

### 6.1 GENERAL

This work consists of furnishing and installing new drainage culverts and extending existing culverts, complete with bedding, backfill, couplings, and all incidentals, in accordance with the Contract Drawings, these Technical Specifications, and the manufacturer's recommendations.

### 6.2 MATERIALS

6.2.1 15-Inch Culvert – ADS N-12 HP Storm polypropylene pipe (corrugated exterior, smooth interior) meeting AASHTO M330 Type S. Or approved equal.

6.2.2 48-Inch Culvert Extensions – HDPE pipe matching the existing 48-inch drainage culverts on site.

6.2.3 Couplings – MarMac Industries Multi-Flex couplings or Engineer-approved equal, sized to provide watertight joints between existing and proposed pipe.

### 6.3 METHODS

6.3.1 Excavate trenches to the lines and grades shown on the drawings, providing a minimum of 6 inches of granular bedding below the pipe invert.

6.3.2 Install pipe with joints fully seated. Couple new 48-inch extensions to existing pipes with MarMac couplings.

6.3.3 Backfill in lifts not exceeding 8 inches and compact to 95 % Standard Proctor density. Minimum cover shall be one foot.

6.3.4 Protect pipes from construction traffic until final cover is placed.

### 6.4 SUBMITTALS

Provide manufacturer data sheets for the 15-inch ADS N-12 HP pipe, 48-inch HDPE pipe, and MarMac couplings.

### 6.5 MEASUREMENT AND PAYMENT

The work under this item shall be measured on a field-surveyed, unit-price basis and payment shall be made at the Contract Unit Price bid for Item 6.1, "15-Inch Culvert," per linear foot, and Item 6.2, "48-Inch Culvert Extension," per linear foot. Prices shall include excavation, bedding, couplings, backfill, and all incidentals.

6.6 PAY ITEMS

Item 6.1, “15-Inch Culvert,” per linear foot;
Item 6.2, “48-Inch Culvert Extension,” per linear foot.

**END OF SECTION 6.0**

## 7.0 REVEGETATION

### 7.1 GENERAL

Work covered under this item shall consist of furnishing all labor, materials, equipment, tools, and appurtenances required to complete the seeding of all areas disturbed or regraded for the roadway and ditch line construction including spoil areas (if any), and any areas disturbed as a consequence of construction.

### 7.2 MATERIALS

#### 7.2.1 Seeding, Fertilizing, Liming, and Mulching Requirements

The minimum requirements of soil amendments are as follows:

- Seed bed preparation shall be done by "tracking" with a dozer. Heavily compacted areas such as road beds shall be ripped prior to revegetation;
- A minimum of 600 pounds per acre of 10-20-10 or 10-20-20 fertilizer, or equivalent, shall be applied. Fertilizer rates based on soil analyses conducted by a qualified laboratory may be substituted for the minimum fertilizer rate;
- Lime shall be required where soil pH is less than 5.5. Lime rates shall be such that a standard soil pH of 6.0 will be achieved; and,
- Mulch shall be used on all disturbed areas using hay, straw, or wood fiber mulch, applied at a rate of 1000 pound per acre.

#### 7.2.2 Temporary Vegetation Specifications

For any disturbed area where no construction activity is anticipated for a period of one month or longer, the following seed species application rates and seeding dates shall be used for establishing temporary vegetation:

| Species to Seed | Suggested Seeding Date | Rate (lbs/acre) | Rage (lbs/1000 s.f.) |
|---|---|---|---|
| Oats | March 1 – June 15 | 128 lbs | 3.0 |
| Annual ryegrass | March 1 – June 15 | 26 lbs | 0.6 |
| and Oats | | 60 lbs | 1.5 |
| Rye | August 15 – November 1 | 120 lbs | 2.8 |
| Annual Ryegrass | March 1 – October 15 | 40 lbs | 1.0 |
| Smooth bromegrass | March 1 – October 15 | 40 lbs | 1.0 |

Straw or hay may be used as mulch at 3 tons per acre in lieu of seeding, especially for winter protection, as approved by the Owner and the WVDEP.

7.2.3 Permanent Vegetation Specification

The time of seeding for grass and legume mixtures is early Spring (March, April, and May), Summer and Fall seeding (August and September), and seed grass (October 1 to November 15). Methods of seeding are broadcast seeding or by hydroseeder.

The following seed species and rate of application shall be used for permanent vegetation:

| Species to Seed | Rate (lbs/acre) |
|---|---|
| Kentucky 31 Tall Fescue | 50 |
| Birdsfoot Trefoil | 15 |
| Annual Ryegrass | 15 |

Note: Birdsfoot Trefoil is to be properly inoculated.

7.3 METHODS

7.3.1 The Contractor shall deliver grass seed mixture in sealed containers showing weight, seed mix, year of production, date of packaging, and location of packaging. Seed in damaged packaging is not acceptable.

7.3.2 The Contractor shall deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer. Fertilizer in damaged packaging is not acceptable.

7.3.3 The need for soil amendments shall be based on a soil analysis conducted by a reputable laboratory. The Contractor shall apply fertilizer in accordance with the manufacturer's instructions. The Contractor shall not apply fertilizer at the same time or with the same machine as will be used to apply seed unless hydroseeding. Fertilizer shall be mixed thoroughly into the upper two inches of soil. After application of fertilizer, the soil surface shall be lightly watered to aid the dissipation of fertilizer.

7.3.4 The Contractor shall apply seed at the rate recommended evenly in two intersecting directions. The seed shall be raked in lightly. The Contractor shall not seed areas in excess of which can be mulched on the same day.

7.3.5 The Contractor shall not sow seeds or fertilizer immediately following rain, when the ground is too dry, or during windy periods.

7.3.6 When applying seeds, lime, fertilizer, or mulch materials with the hydroseeder, do not use more than 100 to 150 pounds of solids per 100 gallons of water. A low pH is detrimental to the legume inoculate. If inoculate is in a seed, fertilizer and lime slurry, it should be used within three to four hours, or a fresh supply of inoculate should be added. When legume is to be included in a slurry mixture containing fertilizer, the amount of inoculate added to the tank should be four times the rate prescribed by the manufacturer. It is preferable to hydroseed when the soil is moist.

7.3.7 Inspection/Maintenance Plan

The revegetated site shall be inspected prior to the Spring and Fall planting season to determine if the required vegetative success rate has been obtained. in the first year after construction, those areas that have been previously seeded, but are deficient, must be reseeded by the Contractor, at no additional cost to the Owner, to establish a satisfactory stand of vegetation. Disturbed areas that may sit idle (longer than one [1] month) for an extended period shall be temporarily revegetated.

Maintenance will consist of repairing areas which may have been damaged by erosion. Rills or gullies which may have developed will be filled with native soil. Repair work will be done as necessary. Benches will be examined to see if they are functioning properly and accumulations of sediment or debris will be removed.

The vegetation will be inspected to determine if vegetation has been established. Standards for legumes and perennial grasses shall require at least a 90 percent ground cover. Substandard areas shall not exceed ¼-acre in size, nor total more than 10 percent of the seeded area. Areas found to be deficient in vegetative cover shall be retreated by grading, seeding, planting, mulching, liming, and fertilizing, as required to establish the required level of vegetative success by the Contractor. The area shall be inspected regularly, but not less than twice per year. At a minimum, the site will be inspected 30 days prior to the end of the recognized Spring and Fall planting seasons. If maintenance work is required, it shall be completed so that seeding can occur prior to the end of the recognized planting season.

7.4 SUBMITTALS

7.4.1 A soil analysis on a composite sample of the soil to be revegetated shall be performed by a reputable laboratory prior to seeding and the results shall be

submitted to the Engineer for approval prior to the application of soil amendments. Review and approval of soil testing does not relieve Contractor of his responsibility for the success of the revegetation.

## 7.5 MEASUREMENT AND PAYMENT

The work under this item shall be measured on a field-surveyed, unit price basis and payment shall be made at the Contract Unit Price bid for Item 7.1, "Revegetation," per acre, which price and payment shall constitute full compensation for all work, including incidentals necessary to complete this item.

## 7.6 PAY ITEMS

Item 7.1, "Revegetation," per acre.

**END OF SECTION 7.0**

## 8.0 GUARDRAIL

### 8.1 GENERAL

Work covered in this section shall consist of furnishing the labor, tools, equipment, incidentals, support facilities, and services necessary to complete the supply, assembly and erection/installation of the WVDOH guardrail Class II and end terminals (WVDOH Section 601).

### 8.2 MATERIALS

All materials required for the construction of the guardrail must be protected from damage during storage and handling. All materials, including materials which have been approved previously, will be subject to inspection by the Engineer as to condition at any time prior to or during incorporation of the material in the work. Materials which have been damaged shall not be used.

Guardrail shall be WVDOH Guardrail Class II (WVDOH).

Additional materials shown on the Construction Drawings, but not listed, will also be in accordance with Section 607 of the WVDOH 2024 Standard Specifications for Roads and Bridges.

Steel Posts: Galvanized steel posts shall not be painted except for touch up painting with zinc primer as specified and shall be in accordance with Section 607 and Subsection 607.3.2 of 2024 WVDOH Standard Specifications for Roads and Bridges.

### 8.3 METHODS

All components of the guard railing shall be erected/installed in accordance with WVDOH 2024 Standard Specifications for Roads and Bridges and as shown on the Construction Drawings.

Posts shall be set plumb in holes dug by hand or mechanically. When posts are driven, the manner of driving shall be such as to avoid battering or distorting of posts. Post holes shall be backfilled with acceptable material placed in maximum six inch (150 mm) loose layers and thoroughly compacted. All posts damaged during erection or driving shall be removed and replaced without additional cost. Any damage to post galvanizing shall be repaired by a material meeting the requirements of WVDOH Section 711.21.

### 8.4 SUBMITTALS

Manufacturer’s product data with application and installation instructions for guardrail.

## 8.5 MEASUREMENT AND PAYMENT

The quantity of guardrail shall be measured by field survey, per linear foot of guardrail. Payment shall be made at the Contract Unit Bid Price for Item 8.1, "Guardrail," per linear foot, which price and payment shall constitute full compensation for all work and materials, including incidentals necessary to complete this item. Incidentals for this item include, but are not limited to, posts, nuts and bolts, fasteners, end terminals and guardrail.

## 8.6 PAY ITEMS

Item 8.1, "Guardrail," per linear foot;

**END OF SECTION 8.0**

## 9.0 TRAFFIC CONTROL

### 9.1 GENERAL

Work covered in this section consists of furnishing all labor, equipment, materials, traffic-control devices, incidentals, support facilities and services necessary to safely maintain and protect vehicular and pedestrian traffic and to protect the work in progress as shown on the Construction Drawings and as required by:

WVDOH Standard Specifications Section 636 "Maintaining Traffic," 2024 Edition transportation.wv.gov

Traffic Engineering Directive 601-4, "Preparation of Maintenance of Traffic Plans."

Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

Contractor shall prepare a site-specific Traffic Control Plan (TCP) showing phased construction, sign layouts, taper lengths, device types and spacing, and haul routes. No work affecting traffic may begin until the TCP is approved by the Engineer and WVDOH.

Flaggers, pilot trucks, portable changeable-message signs, speed-monitor trailers, temporary signals, channelizing devices, temporary pavement markings, temporary barrier/guardrail, shadow vehicles, warning lights and other devices shall be provided where required by the TCP or the Engineer.

### 9.2 MATERIALS

All traffic-control devices shall be NCHRP 350 or MASH compliant and appear on the WVDOH Approved Products List (APL) where applicable. Materials and devices shall meet the corresponding subsections of Division 700 referenced in Section 636.9 (e.g., Type B-1 delineators, warning lights, traffic paint, raised pavement markers).

### 9.3 METHODS

Installation & Maintenance – Erect, move, inspect and maintain devices in accordance with the approved TCP and MUTCD. Review non-work-period setups at least once every 12 hours and after any weather event.

Flagging & Pilot Trucks – Provide certified flaggers and pilot-truck drivers as required by Section 636.11; maintain advance flagger signs.

Lane Closures & Tapers – Construct tapers with the proper device spacing (25 ft minimum for cones in lane and shoulder tapers) and maintain the minimum lane width specified.

Temporary Barriers & Guardrail – Furnish, anchor and remove TL-2/TL-3 barriers, connectors and temporary guardrail per 636.14-636.17.

Pavement Markings – Eradicate conflicting lines and place interim, temporary and permanent markings on the schedule mandated by 636.4 and 663.5.

Nighttime Operations – Provide warning lights, lighting towers or temporary lighting when work occurs after sunset.

Device Removal – Remove all temporary devices and restore the road to normal operation upon completion of work.

9.4 SUBMITTALS

Traffic Control Plan (TCP)

Manufacturer MASH compliance letters and APL numbers for all traffic-control devices.

Daily device inspection logs and flagger certifications.

9.5 MEASUREMENT AND PAYMENT

The work under this item will be measured on a lump-sum basis and paid at the Contract Unit Bid Price for Item 9.1, "Traffic Control, Maintenance & Protection of Traffic," Lump Sum. The lump-sum price shall be full compensation for furnishing, installing, maintaining, relocating and removing all traffic-control devices; providing flaggers, pilot trucks, traffic directors, TCP preparation, updates, and incidentals necessary.

9.6 PAY ITEMS

Item 9.1, "Traffic Control, Maintenance & Protection of Traffic," Lump Sum

**END OF SECTION 9.0**