SECTION 02010 - SOILS INVESTIGATION

The recommendations of **Geotechnical Report for Project Comet Site 10** for Corbin Speculative Building #3, Corbin, KY dated February 27, 2015, is incorporated into the requirements of the contract documents and shall be followed in its entirety.

END OF SECTION

SECTION 02100 - EROSION CONTROL

PART I - GENERAL

1.1 WORK INCLUDED

Submit KPDES Notice of Intent (NOI) and all follow-up information. Take responsibility for locating, furnishing, installing, and maintaining temporary sediment and erosion control best management practices for earth disturbing activity areas and developing a Best Management Practices (BMP) Plan using good engineering practices as required by the Kentucky Pollutant Discharge Eliminating System (KPDES) Permit. Make and record inspections of BMPs and areas as required by the KPDES Permit. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other Federal, State or Local agencies, adhere to the more restrictive laws, rules, or regulations.

1.2 RELATED WORK

A. Section 02110 - Site Clearing
B. Section 02200 - Earth and Rock Work
C. Section 02936 - Seeding

PART II - PRODUCTS

Not used

PART 3 - EXECUTION

As the permittee, submit the KPDES Notice of Intent (NOI) form to the Division of Water. Additionally, delegate in writing to Manager, KPDES Branch, who will have signature authority for reports. Provide the Engineer a copy of the NOI and a BMP Plan to represent and warrant compliance with the Kentucky Division of Water (KDOW) KPDES Permit, related rules, and specifications prior to starting work.

Locate, furnish, install, and maintain temporary sediment and erosion control best management practices (BMP) to represent and warrant compliance with the Clean Water Act, (33 USC Section 1251 et seq.), the 404 permit, the 401 Water Quality Certification, local government agency requirements, and other related rules and permits until the project has a formal release issued.

Provide the Engineer a copy of all weekly and rainfall event inspections as they are completed. Ensure all reports are signed by the delegated authority. keep a current BMP Plan and all inspection records available for public inspection as required by the KPDES Permit.

These provisions survive the completion and/or termination of the contract. The following provisions must be followed:

1. Take full responsibility and make all corrections when a governmental agency or a local governmental authority finds a violation of the above noted requirements; that the BMPs are incomplete; that the BMP Plan is incomplete; or that the implementation of the BMP Plan is not being performed correctly or completely.

2. Make payment to the Owner for the full amount, within 10 Calendar Days of notification, when a governmental agency or a local governmental authority furnishes an assessment, damage judgment or finding, fine, penalty, or expense for a violation of the above noted requirements; the BMPs being incomplete; or the BMP Plan being incomplete or its implementation not being performed correctly or completely. The Owner may withhold the amount of money requested for the above from the next pay estimate and deliver that sum to the governmental agency or local governmental authority issuing the assessment, damage judgment or finding, fine, penalty or expense.

3. Indemnify and hold harmless the Department, and reimburse the Department for any assessments, damage judgment or finding, fine, penalty, or expense as a result of the failure of performing this portion of the Contract. The Owner may withhold the amount of any assessments, damage judgments or finding, fine, penalty or expense from the next pay estimate.

4. The Owner will find the Contract in default if a governmental agency or a local governmental authority furnishes a stop work order for any of the following: a violation of the above noted requirements, that the BMPs are incomplete, that the BMP Plan is incomplete, that the implementation of the BMP Plan is not being performed correctly or completely.

5. When the Owner or any government regulatory agency finds a violation of the above noted requirements, or that the BMPs are incomplete, or that the “BMP Plan is incomplete or that the implementation of the BMP Plan is not being performed correctly or completely, correct and mitigate the conditions within 48 hours of notification by the Owner or regulatory agency. Failure to correct non-compliant site conditions will result in the Owner applying a penalty of $500 per day until corrective actions are completed.

Upon completion of the project, provide the Engineer with a copy of the submitted KPDES Notice of Termination (NOT) form. Retain all records for 3 years or provide them to the Engineer for retention.

End of Section

SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

1.01 Work Included

A. Furnish all labor and equipment required and perform all clearing, grubbing and stripping of topsoil complete as shown on the Drawings and as specified herein.

B. Protect existing improvements and vegetation indicated to remain.

1.02 Related Work

A. Section 02200 - Earth and Rock Work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 Protection

A. Protect existing improvements, bench marks, monuments and other reference points.

B. Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning of bark, piling construction materials or excavated materials within drip line, excess traffic or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to remain.

3.02 Site Clearing

A. Remove trees, shrubs, grass and other vegetation, improvements, or obstructions, interfering with installation of new construction. All stumps, roots, and root clusters shall be grubbed out to a depth of at least two feet below subgrade elevation.

B. Strip topsoil to whatever depths encountered in a manner to prevent mixing with subsoil or other material. Stockpile topsoil for re-use as a final cover where seeding is required.

3.03 Removal

A. All trees and vegetation shall be burned, if possible, or removed from the site. The contractor shall obtain any necessary local or state permits for burning and shall comply with all applicable laws or restrictions for burning. Unsuitable excavated soil or topsoil, or other unsuitable materials shall be removed from the site by the Contractor unless specific arrangements are made with the Owner for disposal on site. Contractor shall make arrangements for off-site disposal of unsuitable materials.

End of Section

SECTION 02200 - EARTH AND ROCK WORK

PART 1. GENERAL

1.1 Work Included

A. This section includes all labor, materials, equipment, and related items to complete all earth and rock work.

B. The extent of earth and rock work is shown on drawings. The following work is included:

1. Establish and maintain horizontal and vertical ground control throughout the work, including staking out building corners or offsets.
2. Locate and clearly mark all utilities on or adjacent to the site.

1.2 Excavation Classification

A. All mass, structural, and trench excavation shall be considered unclassified. No adjustments will be allowed to the contract price for rock encountered during mass or structural excavation.

1.3 Quality Assurance

A. Codes and Standards: Perform earth and rock work in compliance with applicable requirements of governing authorities having jurisdiction. Applicable references include the following:

- ASTM D422 Particle Size Analysis of Soils.
- ASTM D423 Test for Liquid Limit of Soils.
- ASTM D424 Test for Plastic Limit and Plasticity Index of Soils.
- ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort
- ASTM D3017 Moisture content of Soil Aggregates in Place by Nuclear Methods (Shallow Depth).

B. Testing and Inspection Service: A testing laboratory will be employed to perform soil testing and inspection services for quality control testing during earth and rock work operations. Testing laboratory employed is to observe, test and report to the Architect that the compaction requirements specified herein have been obtained.

1.4 Submittals

A. Test Reports-Excavating: Coordinate and schedule in a timely manner the following quality related items. The following reports shall be submitted directly to the Architect from the testing services, with copy to the Contractor:

- Observe proof-rolling.

1.5 Job Conditions

A. Groundwater. Groundwater may be encountered during the excavation. Control the ground water to a level at least three feet below the top of the subgrade.

B. Explosives. Blasting shall only be conducted by licensed blasters and shall be in accordance with state and local requirements, and after conducting a thorough pre-blast survey.

C. Protection of Persons and Property. Barricade open excavations occurring as part of this work and post with warning lights.

D. Bench Marks and Monuments. Maintain carefully all bench marks, monuments and other reference points. If disturbed or destroyed, replace as directed at no cost to the owner.

E. Notify the Architect 48 hours prior to the beginning of any excavation work.

PART 2. PRODUCTS

2.1 Materials

A. Satisfactory soil. Satisfactory soils are materials complying with Unified Soil Classification System (USCS), ASTM D 2487-93, soil classification group SP, SM, SC, ML, MH and CL.

B. Crushed stone. Crushed stone shall comply with Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction.

PART 3. EXECUTION

3.1 Excavation

A. Excavation consists of removal and disposal of material encountered when establishing required bottom of footing elevations. For the purpose of this contract, mass, structural and trench excavation of all materials shall be considered unclassified. Adjustments for rock or similar materials will not be considered.

B. Unauthorized excavation. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Architect.

- Unauthorized excavation, as well as remedial work directed by Architect, shall be at Contractor's expense.

- Backfill and compact unauthorized excavations, as specified for authorized excavations of same classification, unless otherwise directed by Architect.

C. Additional Excavation. When excavation has reached required subgrade elevations, notify Architect who will make an inspection of conditions.

- If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Architect.

- Removal of unsuitable bearing material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

D. Stability of Excavations. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restriction or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

E. Shoring and Bracing. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross-braces, in good serviceable condition.

- Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.

- Maintain shoring and bracing in excavations, regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

F. Dewatering. Prevent surface water and subsurface or ground water from flowing into excavations and flooding project site and surrounding area.

- Do not allow water to accumulate in excavations. Remove water to prevent softening of excavation bottoms and soil changes detrimental to stability of subgrades. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

- Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches. Site grading should be maintained during construction so that positive drainage of the site is promoted at all times.

G. Cold Weather Protection. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F (1 degree C).

3.2 Field Quality Control

A. Quality Control Testing During Construction. Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed. It shall be the

Contractor's responsibility to notify the testing agency at least 24 hours prior to beginning any work which requires testing.

B. If in opinion of Architect, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense to the Owner.

3.3 Crushed Stone Placement

A. Place KY Department of Highways Number 57 stone in twelve inch lifts.

B. Compact with four passes of large vibratory roller for each lift.

3.4 Maintenance

A. Protection of Graded Areas. Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded and rutted areas to specified tolerances.

B. Reconditioning Compacted Areas. Where completed compacted areas are disturbed by subsequent construction operations or weather, scarify surface, reshape and compact to required density prior to further construction.

C. Settling. Where settling is measurable or observable at excavated areas during general project warranty period, add backfill material, compact, and replace surface treatment. Restore appearance, quality and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

D. Desiccation. Where desiccation cracks are observable, remove and replace soil to restore appearance, quality and condition of surface

3.7 Disposal of Excess and Waste Materials

Remove excess excavated material from the site and dispose of properly.

End of Section

SECTION 02720 - STORM DRAINAGE SYSTEMS

PART 1. GENERAL

1.1 Work Included

A. Storm drainage pipe fittings, and accessories.

B. Storm water structures

1.2 Submittals

A. Submit product data under provisions of Section 01300.

PART 2. PRODUCTS

2.1 Reinforced Concrete Pipe

A. Reinforced concrete pipe shall meet requirements of ANSI/ASTM C76, Class I with Wall Type A; B; C; mesh reinforcement; inside nominal diameter as required; bell and spigot end joints.

B. Joint device shall meet requirements of ANSI/ASTM C443, rubber compression gasket joint.

C. Fittings shall be of the same material as pipe, molded or formed to suit pipe size and end design, in required 'T', bends, elbows, cleanouts, reducers, traps, and other configurations required.

2.2 HDPE Pipe

HDPE pipe shall meet the following requirements:

- ASTM D1248 Standard Specification for Polyethylene Plastics Molding and Extrusion Materials
- ASTM F405 Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings
- ASTM F667 Standard Specification for Large Diameter Corrugated Polyethylene Tubing and Fittings.

2.3 Storm Water Structures

Storm water structures shall meet the following requirements, as applicable:

- ACI 304 - Guide for Measuring, Mixing, Transporting and Placing Concrete
- ACI 318 - Building Code Requirements for Reinforced Concrete

- ASTM C478 - Specification for Precast Reinforced Concrete Manholes Sections
- ASTM 1433 - Standard Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
- ASTM C1478 - Standard Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes and Laterals
- ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
- ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealant
- CRSI Manual of Standard Practice

PART 3. EXECUTION

3.1 Pipe Installation

A. Verify that trench cut is ready to receive work, and excavations, dimensions, and elevations are as indicated on Drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal joints watertight.

C. Lay pipe to slope gradients noted on drawings, with maximum variation from true slope of 1/8 inch in 10 feet.

3.2 Storm Water Structure Installation

A. Precast concrete products shall be installed to the lines and grades shown in the contract documents or otherwise specified.

B. Products shall be lifted by suitable lifting devices at points provided by the precast concrete producer.

C. Products shall be installed per the precast concrete producer's recommendation.

End of Section

SECTION 02936 - SEEDING

PART 1 - GENERAL

1.01 Work Included

The work described herein shall consist of application of seed, fertilizer and agricultural limestone to establish turf.

PART 2 - PRODUCTS

2.01 Seed

Seed shall be of the following mixture:

Seed Type	Percentage
Fine Lawn Fescue	60%
Bluegrass	25%
Perennial Rye	15%

Seed shall be applied uniformly at the rate of three pounds per 1,000 square feet.

2.02 Agricultural Limestone

Agricultural limestone shall have a minimum calcium carbonate equivalent of 90 percent and shall be ground to such a fineness that at least 90 percent will pass a 10-mesh sieve and at least 50 percent will pass a 60-mesh sieve. Agricultural ground limestone shall be from quarries approved by the Kentucky Department of Agriculture.

Agricultural limestone shall be applied uniformly at the rate of 100 pounds per 1,000 square feet.

2.03 Fertilizer

Fertilizer shall be commercial grade, free flowing, uniform in composition.

Fertilizer shall be 10-20-20 applied uniformly at the rate of 25 pounds per 1,000 square feet.

2.04 Mulch

Mulch shall be clean straw and shall be applied at a rate of 100 pounds per 1,000 square feet.

PART 3 - EXECUTION

3.01 Delivery, Storage and Handling

Fertilizer and limestone shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to State and Federal laws. In lieu of containers, fertilizer and limestone may be furnished in bulk and a certificate indicating the above information shall accompany each delivery.

Seed, limestone and fertilizer shall be kept in dry storage away from contaminants, insects and rodents.

3.02 Seeding

Seed shall be broadcast uniformly. The seed shall be covered to an average depth of 1/4 inch by means of spike-tooth harrow, cultipacker, no till drill or other approved device. Seed shall not be broadcast when winds are above 10 mph. Immediately after seeding, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width and the soil moistened to a depth of 6-8 inches. If seeding is performed with a cultipacker-type seeder or if seed is applied in combination with hydromulching, rolling will not be required.

3.03 Maintenance

Seeded areas shall be protected and maintained by watering and replanting as may be necessary to produce a uniform stand of grass. Maintenance shall continue until a dense, uniform turf is established composed of the grasses specified and until acceptance, and shall include repair of damage caused by erosion.

End of Section