For all other addenda related to this project, please see Lynn Imaging's Planroom.

CODELL
CONSTRUCTION MANAGEMENT SINCE 1908

Clark County RDC Misc. Renovations and Athletics Post-Bid Addendum # 1

Issued April 10th, 2026

Bid Date: April 23rd, 2026 @ 02:00 PM Eastern Daylight Time

Please see the attached addendum which includes the following:

Codell Construction Post-Bid Addendum #1

End.

POST-BID ADDENDUM #1

APRIL 10, 2026

Clark County Public School
1600 West Lexington Avenue
Winchester, KY 40391
Clark County RDC Misc. Renovations and Athletics

This addendum forms as part of the Contract Documents and modifies the original Contract Documents within the Volume One Project Manual dated February 18, 2026, and adds an additional Volume Two Project Manual dated March 2026, and Drawing Set dated March 27, 2026, as noted below. **This modification will pertain to BP#4 only**. Failure to note this addendum on the Bid Proposal Form may result in disqualification of the bid.

Pages: 234

Clarification:

1. **Advertisement for bids** BP#4 Athletic Field.
2. Use attached **Form of Proposal 00200** to replace the pages in the Clark County RDC Misc. Renovations and Athletics Project Volume One Bidding and Contract Documents for submittal of bid.
3. Use attached **Alternates and Allowances 01030** to replace the pages in the Clark County RDC Misc. Renovations and Athletics Volume One Bidding and Contract Documents for submittal of bid.
4. Use attached **Construction Facilities and Temporary Controls 01500** to replace the pages in the Clark County RDC Misc. Renovations and Athletics Project Volume One Bidding and Contract Documents for submittal of bid.
5. Use attached **BP#4 Language Specific to Individual Bids 01900** to replace the pages in the Clark County RDC Misc. Renovations and Athletics Project Volume One Bidding and Contract Documents for submittal of bid.
6. See attached project manual and drawings from design team.

End

SECTION 00010
ADVERTISEMENT FOR BIDS

Clark County Board of Education (OWNER) will receive proposals through Codell Construction Company (CONSTRUCTION MANAGER) to furnish all labor and materials to complete the BG #26-108 Clark Co RDC Misc. Renovation and Athletics located at 620 Boone Avenue, Winchester, KY 40391. Work is to be performed in accordance with plans, specifications, and addenda prepared by RossTarrant Architects (ARCHITECT).

The Owner reserves the right to reject any or all bids and to waive all informalities and/or technicalities where the best interest of the Owner can be served. Bid opening will be public, and contracts and direct purchase orders will be with the Owner.

Bids will be due by April 23, 2026, at 2:00 PM EDT, and will be opened at Clark County Board of Education, 1600 West Lexington Avenue, Winchester, KY 40391. Each bid must be accompanied by a 5% Bid Bond. The bid will be submitted in duplicate on copies of the Form of Proposal located in the Volume One Project Manual Bidding and Contract Documents. Both copies of the Form of Proposal and Bid Bond shall be placed in a manila envelope and have the Project Name and Proposed Bid Package number affixed. No Bidder may withdraw a bid submitted for a period of sixty (60) days after the date set for the opening of bids.

If a bidder wishes to mail a bid, it should be mailed to: Brandon Watkins, Clark County Board of Education, 1600 West Lexington Avenue, Winchester, KY 40391. If bid is mailed, it must be received prior to April 23, 2026, at 2:00 PM EDT. Electronic bids will **NOT** be allowed.

Questions should be directed to the Construction Manager and the Architect.

Craig Music
Codell Construction Company
4475 Rockwell Road
Winchester, KY 40391
(859) 744-2222
(859) 487-8768
cmusic@codellconstruction.com

Brian Buckner
RossTarrant Architects
101 Old LaFayette Avenue
Lexington, KY 40502
(859) 254-4018
(757) 560-8370
bbuckner@rosstarrant.com

An electronic copy of the complete set of Drawings, Specifications, and the Project Manual are available at no cost from Lynn Imaging, lynnimaging.com. If bidder desires hard copy of Drawings and Specifications, bidder will be responsible for paying the refundable printing cost of $450.00.

Bid documents will be on file at:
1. Architect: RossTarrant Architects, 101 Old LaFayette Ave., Lexington, KY 40502
2. CM: Codell Construction Company, 4475 Rockwell Road, Winchester, KY 40391
3. Builder's Exchange, Inc., 7250 Poe Avenue, Dayton, OH 45414
4. Dodge Construction Central, 300 American Metro Blvd. Suite 185, Hamilton, NJ 08619
5. The Blue Book Building & Construction Network, 800 E. Main Street, Jefferson Valley, NY 10535
6. Builders Exchange, 2300 Meadow Drive, Louisville, KY 40218
7. Builders Exchange of Tennessee, 300 Clark Street, Knoxville, TN 37921
8. AGC of Western Kentucky, 2201 McCracken Blvd, Paducah, KY 42001-9655
9. Construct Connect,3825 Edwards Road, Suite 800, Cincinnati, OH 45209

The Project Schedule will be issued via addendum. The contract will include liquidated damages assessed at $1,000.00/day if the completion date is not met. **Successful Bidders are required to furnish a 100% Performance and Labor and Material Payment Bond for this Project.**

The following bids are requested:

BID PACKAGE 4-ATHLETIC FIELDS

SECTION 00200
KENTUCKY DEPARTMENT OF EDUCATION **FORM OF PROPOSAL**
702 KAR 4:160

BG No: 26-108

Date: _____ To: Clark County Board of Education

Project Name: Clark County RDC Misc. Renovations and Athletics Bid Package No. _____

City, County: Winchester Clark

Name of Contractor: _____

Mailing Address: _____

Business Address: _____ Telephone: _____

Email Address: _____

Having carefully examined the Instructions to Bidders, Contract Agreement, General Conditions, Supplemental Conditions, Specifications, and Drawings, for the above referenced project, the undersigned bidder proposes to furnish all labor, materials, equipment, tools, supplies, and temporary devices required to complete the work in accordance with the contract documents and any addenda listed below for the price stated herein.

Addendum _____ (Insert the addendum numbers received or the word "none" if no addendum received.)

BASE BID: For the construction required to complete the work, in accordance with the contract documents, I/We submit the following lump sum price of:

_____
Use Figures

_____ Dollars & _____ Cents
Use Words for both dollars and cents

ALTERNATE BIDS: (If applicable and denoted in the Bidding Documents)

For omission from or addition to those items, services, or construction specified in Bidding Documents by alternate number, the following lump sum price will be added or deducted from the base bid. If no change in cost, indicate in box in "No Cost Change" Column. If alternate does not apply to bidder's scope of work, indicate in box in "Not Applicable" Column.

Alternate Bid No.	Alternate Description	+ (Add to the Base Bid)	- (Deduct from the Base Bid)	No Cost Change (from the Base Bid)	Not Applicable
Alt. Bid No. 1				☐	☐
Alt. Bid No. 2				☐	☐
Alt. Bid No. 3				☐	☐
Alt. Bid No. 4				☐	☐
Alt. Bid No. 5				☐	☐
Alt. Bid No. 6				☐	☐
Alt. Bid No. 7				☐	☐
Alt. Bid No. 8				☐	☐
Alt. Bid No. 9				☐	☐
Alt. Bid No. 10				☐	☐

A maximum of 10 Alternate Bids will be acceptable with each Base Bid. Do not add supplemental sheets for Alternate Bids to this document.

LIST OF PROPOSED SUBCONTRACTORS:

List on the lines below each major branch of work and the subcontractor involved with that portion of work. If the branch of work is to be done by the Contractor, so indicate.

The listing of more than one subcontractor in a work category shall invalidate the bid.

The listing of the bidder as the subcontractor for a work category certifies that the bidder has in current employment, skilled staff and necessary equipment to complete that category. The architect/engineer will evaluate the ability of all listed subcontractors to complete the work and notify the owner. Listing of the bidder as the subcontractor may invalidate the bid should the architect's review indicate bidder does not have skilled staff and equipment to complete the work category at the time the bid was submitted.

A maximum of 40 subcontractors will be acceptable with each bid. Do not add supplemental sheets for subcontractors to this document.

The bidder shall submit the list of subcontractors with the bid.

	BRANCH OF WORK (to be filled out by the Architect)	**SUBCONTRACTOR** (to be filled out by the contractor)
1.	Construction Surveyor	
2.	Earthwork	
3.	Storm Drainage	
4.	Sportsfield Drainage and Grading	
5.	Concrete Curbs	
6.	Synthetic Turf Installer	
7.	Synthetic Turf Certified Field Builder (CFB)	
8.	Athletic Equipment	
9.	Lawns and Grasses	
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LIST OF PROPOSED SUPPLIERS AND MANUFACTURERS:

List on the lines below each major material category for this project and the suppliers and manufacturers involved with that portion of work. Listing the supplier below means the Contractor is acknowledging authorization from the Supplier to include the Supplier in this bid.

The listing of more than one supplier or manufacturer in a material category shall invalidate the bid.

A maximum of 40 suppliers and manufacturers will be acceptable with each bid. Do not add supplemental sheets for suppliers to this document.

The bidder shall submit the list of suppliers and manufacturers within one (1) hour of the bid.

	MATERIAL DESCRIPTION BY SPECIFICATION DIVISION AND CATEGORY (to be filled out by the Architect or Contractor)	**SUPPLIER** (to be filled out by the Contractor)	**MANUFACTURER** (to be filled out by the Contractor)
1.	Concrete		
2.	Athletic Equipment		
3.	Synthetic Turf		
4.	Lawns and Grasses		
5.	Storm Structures		
6.	Storm Piping		
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	MATERIAL DESCRIPTION BY SPECIFICATION DIVISION AND CATEGORY (to be filled out by the Architect or Contractor)	**SUPPLIER** (to be filled out by the Contractor)	**MANUFACTURER** (to be filled out by the Contractor)
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UNIT PRICES:

Indicate on the lines below those unit prices to determine any adjustment to the contract price due to changes in work or extra work performed under this contract. The unit prices shall include the furnishing of all labor and materials, cost of all items, and overhead and profit for the Contractor, as well as any subcontractor involved. These unit prices shall be listed in units of work.

A maximum of 40 unit prices will be acceptable with each bid. Do not add supplemental sheets for unit pricing to this document.

The bidder shall submit the list of unit prices within one (1) hour of the bid.

	WORK (to be filled out by the Architect)	**PRICE / UNIT** (to be filled out by the Contractor)	**UNIT** (to be filled out by the Contractor)
1.	Allowance #1: Trench Earth Excavation and Off-Site Disposal and Replacement with DGA, Installed and Compacted.		CY
2.	Trench Earth Excavation and Off-Site Disposal		CY
3.	DGA, Installed and Compacted		CY
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	WORK (to be filled out by the Architect)	**PRICE / UNIT** (to be filled out by the Contractor)	**UNIT** (to be filled out by the Contractor)
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DIRECT MATERIAL PURCHASES:

Indicate on the lines below those materials to be purchased directly by the Owner with a Purchase Order to be issued by the Owner to the individual suppliers. The value of the direct Purchase Order cannot be less than $5,000. Following the approval of bids and alternates, the bidder will have the opportunity to formalize the listing of Purchase Orders and Amounts. The CM will prepare and submit the electronic Purchase Order Summary Form provided by KDE. Listing the supplier below means the Contractor is acknowledging authorization from the Supplier to include the Supplier in this bid.

A maximum of 50 POs will be acceptable with each bid. Do not add supplemental sheets for additional POs to this document.

The bidder shall submit the list of Purchase Orders within four (4) days of the bid.

	SUPPLIER (to be filled out by the Contractor)	**PURCHASE ORDER DESCRIPTION** (to be filled out by the Contractor)	**PURCHASE ORDER AMT.** (to be filled out by the Contractor)
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	SUPPLIER (to be filled out by the Contractor)	**PURCHASE ORDER DESCRIPTION** (to be filled out by the Contractor)	**PURCHASE ORDER AMT.** (to be filled out by the Contractor)
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	SUPPLIER (to be filled out by the Contractor)	**PURCHASE ORDER DESCRIPTION** (to be filled out by the Contractor)	**PURCHASE ORDER AMT.** (to be filled out by the Contractor)
45.			
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TIME LIMIT FOR EXECUTION OF CONTRACT DOCUMENTS:

In the event that a bidder's proposal is accepted by the Owner and such bidder should fail to execute the contract within ten (10) consecutive days from the date of notification of the awarding of the contract, the Owner, at his option, may determine that the awardee has abandoned the contract. The bidder's proposal shall then become null and void, and the bid bond or certified check which accompanied it shall be forfeited to and become the property of the Owner as liquidated damages for failure to execute the contract.

The bidder hereby agrees that failure to submit herein above all required information and/or prices can cause disqualification of this proposal.

Submitted by:

NAME OF CONTRACTOR / BIDDER: _____

AUTHORIZED REPRESENTATIVE'S NAME:_____
Signature

AUTHORIZED REPRESENTATIVE'S NAME(printed): _____

AUTHORIZED REPRESENTATIVE'S TITLE: _____

NOTICE: Bid security must accompany this proposal if the Base Bid price is greater than ~~of $25,000.~~ $100,000. (change effective June 3, 2019.)

This form shall not be modified.

SECTION 01030
ALTERNATES AND ALLOWANCES

An alternate is a defined portion of the Work that is identified on the Form of Proposal. The Owner may choose to include an alternate in the final scope of the project based upon the amounts proposed by the Bidder(s). The amount(s) may add or deduct from the Bidder's Base Bid for the work if the Bidder's work is to be affected by the inclusion of the alternate in the project scope.

Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted alternate is complete and fully integrated into the Project.

Notification: Immediately following Contract award, prepare and distribute to each party involved, notification of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for consideration at a later date. Include a complete description of negotiated modifications to alternates.

Schedule: A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each alternate.

Include as part of each alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

SCHEDULE OF ALTERNATES:
NONE

SCHEDULE OF ALLOWANCES:

Allowance #1: Unsuitable Soils – Provide labor, materials and equipment necessary for Trench Earth Excavation and Off-Site disposal of 100 cubic yards of unsatisfactory soils as determined by the Architect, and replacement with 100 cubic yards of DGA, installed and compacted. Comply with all contract document requirements. This allowance is for excavation required as a result of unforeseen conditions and does not represent the work shown on the construction drawings. Architect must approve materials for this allowance prior to the work.

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

GENERAL

1. The following items apply to each individual Contractor as it pertains to their work.

2. Project Identification and Temporary Signs: **Bid Package #4**

    a. Provide and install a project sign of size, composition, and color as provided by the Architect. Installation shall include all supporting framing and setting materials required to make the sign weather resistant and capable of withstanding normal environmental forces including rain, snow, ice, and wind. Unless otherwise indicated by the Architect, digitally printed sign, in UV resistant ink, shall be 8' w 4' h on 4"x 4" posts set in 1' diameter holes 3'6" deep filled with concrete. Artwork will be provided to the Contractor.

    b. Provide and install information and safety signs as indicated below:
        i. Provide 2 "Construction Entrance" signs.
        ii. Provide 3 "Do not Enter – Construction Work" signs. Attach to each entrance gate/fence.
        iii. Provide 3 "All visitors must report immediately to Construction Manager" signs. Attach to each entrance gate/fence.
        iv. Provide 3 "Hard Hat Project" signs. Attach to each entrance gate/fence.

    c. Contractor is responsible to include in the base bid all costs for maintenance, repair, replacement, relocation, and removal of signs.

    d. Installation of unauthorized signs will not be permitted.

3. Barriers, Enclosures, and Fire Protection: **Bid Package #4**

    a. Provide suitable barriers and safety devices required to prevent public entry, provide worker safety, protect the work and materials, existing facilities, trees, and plants. Remove at the completion of work or at direction of Construction Manager.

        i. **Bid Package #4:** Any barricade or safety device removed by any Contractor, Subcontractor, or third party, shall be replaced any time the safety hazard is left unattended by any Contractor, Subcontractor, or third party. Without assuming any responsibility to do so, Construction Manager, Owner, or other Contractors may, without notice to Contractor(s), correct any safety hazard created or permitted by Contractor and bill Contractor for the costs of this work including any related costs such as attorneys' fees and an allowance for overhead and

profit not to exceed 15% of the amount advanced. In the event that the responsible party cannot be identified, the costs for correction will be divided and billed to all Contractors present on the jobsite at the time, as Safety is a requirement of ALL parties on the jobsite.

b. Fencing: **Bid Package #4** Contractor shall provide a new chain link fence for the project. Fence shall be a minimum of 6' tall, 11-gauge chain link type with a continuous top rail. Posts shall be 2" diameter and spaced no more than 10' apart and placed in the ground. Two (2) double swing gates with a minimum 12'-0" opening shall be provided. Contractor shall provide two (2) padlocks and 8 keys (keyed alike) to the Construction Manager for distribution. Contractor shall inspect the conditions of the fencing daily and assure the site is secure. Contractor is responsible to include in the base bid all costs for maintenance and repairs of the construction fence for the duration of the project. Contractor is responsible for the removal of the construction fence at the direction of the Construction Manager.

c. Contractor is responsible to provide, install, and remove at the direction of the Construction Manager temporary, weathertight barriers, partitions, and enclosures as needed, including but not limited to door and window openings.

d. Contractor shall construct enclosures at all exits from plywood material, hinge the doors, and provide locks and keys for secure measures.

e. Contractor is responsible to provide protection for all openings and areas of work that could pose a safety hazard.

f. Provide and install a fire extinguisher at each exit from every floor. (Example: 3 floors with 3 exits each floor = 9 total fire extinguishers)

g. At the completion of work or at the direction of the Construction Manager remove temporary measures, clean, and repair any damage caused by installation, and return the area to finished condition.

4. Wet Works : **Bid Package #4**

   a. All contractors are responsible for providing and maintaining a Wet Works plan.

5. Hot Works : **Bid Package #4**

   a. All contractors are responsible for providing and maintaining a Hot Works plan.

6. Temporary Storage, Office Facilities, and Materials: **Bid Package #4**

   a. **Construction Manager will determine and coordinate placement of all temporary storage and office facilities.**

b. Provide temporary storage facilities to meet requirements adequate for storage and handling of Contractor's products. Provide ventilation adequate for products to be stored and to comply with code requirements. Maintain temperatures for products as specified and with the range recommended by manufacturer of products to be stored.

c. Contractor shall relocate temporary storage facilities, office facilities, and/or materials, as often as directed by the Construction Manager.

d. Restore areas to original condition upon removal of temporary storage facilities, office facilities, and/or materials.

e. Existing and New Buildings **will not** be used as storage areas unless directed by the Construction Manager.

SUPPORT FACILITIES

7. Waste Disposal Facilities: **Bid Package #4**
   a. **Bid Package #4**: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Furnish as much dumpster yardage as necessary for general construction.

   b. **Bid Package #4**: If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.

   c. Trash Cans: **Bid Package #4**
      i. Provide three (3) Commercial Grade Rollable Trash Bins minimum 1 Cubic Yard to be used throughout the project. These bins are for general trash, not construction debris. Contractors are required to remove their construction debris, excess materials, and scrap from the building daily. Contractor is responsible for emptying these bins daily. Coordinate with Construction Manager on location of Bins.

8. Weekly Cleaning: **Bid Package #4**

   a. Cleanup day will be weekly on Thursdays starting at 8:00am and will conclude at the direction of the Construction Manager.

   b. The Construction Manager will format and update a cleaning log for documentation which will require the Contractor's initials for confirmation.

   c. Each trade on site is to supply one (1) man each week for cleanup. **Failure to participate in the weekly cleanup session will result in a back-charge issued as a deductive change order to the Contractor.** The Construction Manager will base the deductive change order (back-charge) amount on $350 per hour at a minimum of eight hours for each cleaning day missed.

d. Each Contractor is responsible for supplying their own brooms and other tools to complete the work.

e. In addition to the above, **Bid Package #4** is to include in the base bid an additional **250** man-hours for the cost of cleaning to be used at the Design Team/Construction Manager's direction.

9. Interim Cleaning: **Bid Package #4**

a. Contractor shall include a onetime interim cleaning within base bid. Interim Cleaning is defined the same as final cleaning except no window cleaning. Interim cleaning will take place at the direction of the Construction Manager and likely will be prior to punch-list preparation.

10. Final Cleaning: **Bid Package #4 is responsible for all items in this section unless otherwise noted.**

a. Final cleaning shall mean to clean by acceptable methods all interior and exterior surfaces so the project can be ready for use by the Owner.

b. Remove labels that are not required as permanent labels.

c. **Bid Package #4** is responsible for cleaning transparent materials, including mirrors and window/door glass, to a polished condition, removing substances that are noticeable as vision obscuring materials. Contractor shall remove stickers and residue substance from stickers on windows. Upon notification from Construction Manager, Contractor is responsible to return to the jobsite for final cleaning.

d. Clean exposed exterior and interior hard-surfaced finishes, to a dirt-free condition, free of dust, stains, films, and similar noticeable distracting substances. Restore reflective surfaces to original reflective conditions.

e. Clean project site (yard and grounds) involved in construction, including landscaped development areas, of litter and foreign substances. Sweep paved areas to a broom-clean conditions; remove stains, petrol-chemical spills, and other foreign deposits. Rake grounds that are neither planted nor paved to a smooth even surface.

11. Temporary Sanitary Facilities: **Bid Package #4**

a. Comply with all regulation and health codes for type, number, location, operation, and maintenance of facilities.

b. Contractor is responsible to provide, install, and maintain a temporary toilet holding tank for the Construction Manager's trailer to be serviced with all other temporary toilets.

c. Contractor is responsible to provide, install, and maintain (water and soap) 1 handwashing station per 5 temporary toilets for the duration of the project. Live water connection is not required; a refillable tank style is acceptable. If providing a station that does require a live water connection, Contractor is responsible for live water connection.

TEMPORARY UTILITIES

12. Temporary Water: **Bid Package #4**

a. Install branch piping with taps located so that water is available throughout the construction site by use of hoses. Protect piping and fittings against freezing and all construction activities.

b. Contractor shall make arrangements and pay all fees for temporary water connections, including but not limited to tap, meter, hydrant, et cetera. Contractor shall comply with federal, state, and local codes and regulations and with utility company requirements.

c. Contractor is responsible to provide running water to the Construction Manager's trailer for plumbing use.

d. Temporary water (metered) usage shall be paid for by the **Owner.**

13. Ventilation: **Bid Package #4**

a. All Contractors are responsible for providing and maintaining adequate ventilation of enclosed areas for curing of installed materials to prevent hazardous accumulation of dust, fumes, vapors, or gases associated with their scope of work.

b. If Contractor removes or modifies temporary enclosures to facilitate ventilation, Contractor is responsible for replacing or restoring the temporary enclosure like new.

14. Temporary Electric: **Bid Package #4**

a. Contractor shall provide temporary service and hookup to the Construction Manager's trailer.

b. Within the building, the Contractor shall provide, until substantial completion, all wiring, switches, sockets, lamps, and similar equipment required for temporary lighting. Temporary lighting shall be equivalent to minimum of 30-foot candles to enable all trades to complete their work and to enable the Architect and Construction Manager to check all work as it is being performed.

c. Provide a minimum of one outlet for power tools, masonry saw, and like tools for each 1,000 sq ft. of floor space.

d. Provide adequate outlets/service to support temporary heating and cooling equipment.

e. Temporary electric connections and installation shall be paid for by the installing Contractor.

f. Temporary electric (metered) usage shall be paid for by the **Owner.**

g. Comply with federal, state, and local codes and regulations and with utility company requirements.

15. Removal: Each respective Contractor is responsible for disconnecting and removal of temporary services and installations. Clean and repair damage caused by removal.

CONSTRUCTION AIDS

16. **Bid Package #4** is responsible to provide and remove construction aids and equipment required by personnel and to facilitate the execution of the work: scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.

17. **Bid Package #4** shall be responsible to clean and repair damage caused by construction aids or equipment.

18. **Bid Package #4** shall defend and fully indemnify the Owner and Codell as provided in the Contract Documents, against any claims or damages resulting from safety violations or other negligence of Contractor, its employees, its Subcontractors, or third parties.

USE OF PERMANENT SYSTEMS

19. Temporary Use of Equipment:

a. The permanent systems and/or equipment including, but not limited to heating, plumbing, and electrical equipment, when installed, may be used for temporary services, subject to the approval of the Architect, Construction Manager, and Owner. Should the permanent systems and/or equipment be used, the appropriate Contractor will be responsible for all measures required to enable temporary use.

b. Contractor shall also make any replacement required due to damage, without cost.

c. Cost of fuel for permanent systems and/or equipment consumed during construction will be by the **Owner.**

d. The responsible Contractor shall assume all costs of leaving the same in “as new” condition. At the time of acceptance of the system by the Architect/Engineer, all construction filters and other temporary items will be removed and replaced with new.

e. Use of any permanent systems does not alter or prematurely begin the warranty period.

PROJECT RULES

20. Eating, Drinking, & Tobacco Products:

a. Each Contractor shall comply with all Owner, local, state, and federal laws, ordinances, and safety guidelines.

b. The Construction Manager will designate an area within the building for eating and drinking. No eating or drinking will be permitted outside of these designated areas other than drinking water.

c. The use of tobacco products will not be permitted. One warning will be applied to an individual with the second instance resulting in removal from the project.

d. Cellphones shall be used for business and emergency purposes only.

PUNCH LIST

21. Punch List Manager: **Bid Package #4**

a. Contractor is to provide a punch list manager. The punch list manager must be on site full time once punch list work commences. The manager must have a history with the project and must be able to complete the punch list and provide updates to the Construction Manager.

b. If punch list work is not 100% complete by the Final Completion date established at Substantial Completion and any extension of time granted under the General Conditions, the Contractor and/or Contractor’s Surety will be notified and the Owner will complete the work at the expense of the Contractor. The Owner shall have the right to deduct the cost for completion of such work items from money in its hands otherwise due, or to become due, to Contractor or to sue for and recover compensation for damages and costs for nonperformance of the Contract.

END OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

SECTION 01900

LANGUAGE SPECIFIC TO INDIVIDUAL BIDS

(CONTRACTOR/SUBCONTRACTOR/SUPPLIER)

BID PACKAGE: #4 ATHLETIC FIELD

INCLUDED:

1. The requirements of all Division 0 and Division 1 Sections apply to this and all Contract Packages.
2. Furnish, install, and warrant all work shown on the drawings and described in the following specification sections:

   012400 Geotechnical Data-Geotechnical Report
   015713 Temporary Erosion and Sediment Control
   024119 Selective Structure Demolition
   116833.23 Athletic Equipment - Field
   311000 Site Clearing
   312200 Grading
   312200.13 Laser Grading
   312316 Excavation
   312316.13 Trenching
   312316.26 Rock Removal
   312319 Dewatering
   312323 Fill
   312323.13 Flowable Fill
   312513 Permanent Erosion Controls
   313413 Flexible Concrete Erosion Control Mat
   321123 Aggregate Base Courses
   321313 Concrete Paving
   321373 Pavement Joint Sealants
   321613 Concrete Curbs and Gutters
   321823.29 Artificial Turf
   329219 Seeding
   334100 Subdrainage
   334101 Site Storm Drainage Piping
   334413.13 Catch Basins and Curb Inlets
   334903 Storm Drainage Outlets
   334913 Storm Drainage Manholes, Frames and Covers
3. Layout
4. Cleanup
5. Coordination with other trades
6. BP#4 is responsible for all work indicated on the plans and in the specifications.
7. Contractor is responsible for obtaining all permits required to complete this work including but not limited to Land Disturbance Permit, Grading Permit, Demolition Permit, SWPPP, ECT.

8. Contractor is responsible for reviewing and adhering to geotechnical investigations as it pertains to this scope of work.
9. Contractor is to file the Notice of Intent (NOI) for Stormwater Discharge via KPDES through the State.
10. Contractor is responsible for the SWPPP, BMP, and all erosion control, etc.
11. Contractor is responsible to disconnect all existing utilities and pay all necessary disconnect fees. Coordinate with the Construction Manager prior to disconnecting any utility.
12. Contractor is responsible for all traffic control required when working on public roadways. All OSHA, Federal Highway, State Highway and local ordinances must be followed.
13. Contractor is responsible for dewatering & rock removal (if any) as it pertains to this scope of work. Reference contract documents and geotechnical report.
14. Contractor is responsible for site clearing and protection of trees that are to remain.
15. Contractor is responsible for protection of site features to remain, including but not limited to benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
16. Contractor is responsible for all surveying as indicated in the contract documents.
17. Contractor is responsible for surveying utility piping and conduits prior to backfilling of the utility trench.
18. Contractor is responsible for all work associated with the storm piping, storm structures, concrete swales, headwalls, manholes, curb inlets etc. Must be a complete storm system.
19. Contractor is responsible for all work associated with meeting the design grading plans.
20. Contractor shall include 500 tons of crushed stone spread in-place to be used at the direction of the Construction Manager. Contractor must provide delivery tickets signed by the Construction Manager before payment of stone is issued.
21. Contractor is responsible for hauling off all excess spoils related to this scope of work.
22. Contractor is responsible for dust control on the project and keeping all adjacent roads free of mud and debris on a daily basis until completion of their work. Contractor shall provide a broom sweeper onsite daily until time designated by CM.
23. Contractor will be responsible for removal of all structures, sidewalks, drives, trees, stumps, etc. Reference drawings for complete scope.
24. Contractor shall furnish as much dumpster yardage as necessary for all work described in this bid package. Reference Section 01500 Construction Facilities and Temporary Controls. Coordinate with CM on dumpster location.
25. Contractor shall include a one-time interim cleaning within bid. Interim cleaning will be performed at the direction of the CM and most likely will occur prior to punch list being completed by the Architect. Final Cleaning will occur immediately after all punch list work is complete in such area.

<u>BREAKOUT ITEMS:</u>

Concrete	Athletic Equipment
Synthetic Turf	Lawns and Grasses
Storm Structures	Storm Piping

SPECIAL INSTRUCTIONS:

1. Refer to Alternates Section 01030. It is the responsibility of the Bidder to include any alternates that are applicable to their bid package.
2. Review all pages of the plans and specifications to ensure coordination of your work with other trades.
3. Bidder is advised that all work to be performed will be governed solely by the plans, specifications, and addenda. Bidder is directed to the above specification sections for technical information and any additional items of work involved.
4. It shall be the responsibility of the bidder to determine which Bid Package or combination of Bid Packages the Bidder desires to bid.
5. **REFER TO THE FRONT OF SECTION 01900-LANGUAGE SPECIFIC TO INDIVIDUAL BIDS.**

rosstarrant architects

a MORE group brand

Clark County Miscellaneous Renovations Phase C: GRC Practice Field

Clark County Board of Education
Winchester, Kentucky

RTA 25019
BG 26-108

Project Manual

Volume 1 of 1
March 2026

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RossTarrant Architects, Inc.
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CONSTRUCTION MANAGER
Codell Construction
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INDEX TO SPECIFICATIONS
FOR
CLARK COUNTY MISCELLANEOUS PROJECTS
PHASE C – GRC

VOLUME 1 OF 1

END OF INDEX TO SPECIFICATIONS

SECTION 012400 - GEOTECHNICAL DATA

PART 1 GENERAL

1.01 GEOTECHNICAL REPORT

A A geotechnical exploration of the site was conducted by Solid Ground Consulting Engineers, dated February 28, 2026.

1. A digital copy in color may be requested of the Architect.

B The report of the geotechnical exploration is appended hereto for reference only and is not a part of the Contract Documents. The boring layout and log of borings is appended to the set of contract drawings. No warranty of content or accuracy is expressed or implied. Neither the Owner nor the Architect will be responsible for interpretations or conclusions drawn from this report by the Contractor. This data is made available solely for the convenience of the Contractor.

END OF SECTION

SOLID GROUND
CONSULTING ENGINEERS

REPORT OF GEOTECHNICAL EXPLORATION

Proposed Clark County Field Additions

Winchester, Clark County, Kentucky

Prepared for: RossTarrant Architects

Lexington, Kentucky

February 28, 2026

TABLE OF CONTENTS

SOLID GROUND
CONSULTING ENGINEERS

February 28, 2026

c/o Ms. Sarah Siekkinen
Ross Tarrant Architects
101 Old Lafayette Avenue
Lexington, Kentucky 40502

Subject: **Report of Geotechnical Exploration**
Proposed Clark County Field Improvements
Winchester, Clark County, Kentucky
Solid Ground Project No.: 26-145

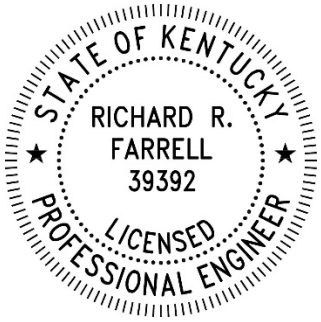
Ms. Siekkinen,

Solid Ground Consulting Engineers (Solid Ground) is pleased to present our Report of Geotechnical Exploration. This report is for the proposed Clark County Field Improvements project located in Winchester, Kentucky. The geotechnical exploration was conducted in general accordance with the scope of work agreed upon in Solid Ground Proposal No. 126225, dated November 20, 2025.

This report contains our findings and recommendations for the referenced project detailed above. Once completed, it is recommended that Solid Ground have the opportunity to review plans and specifications. In addition, it is recommended that Solid Ground be retained to perform observations during earthwork construction. Solid Ground will not be held responsible for interpretations and field observations made by others.

We appreciate the opportunity to provide our consulting services to you. We look forward to working with you on this and future projects.

Sincerely,
SOLID GROUND CONSULTING ENGINEERS,



Rich Farrell, PE
Senior Engineer
Kentucky License Number 39392

Nathaniel O'Leary M.S., GIT
Staff Geologist

1.0 Executive Summary

Solid Ground Consulting Engineers performed a geotechnical exploration in support of the proposed field improvements at George Rogers Clark High School and Robert D. Campbell Junior High, both of which are in Winchester, Clark County, Kentucky. The approximate coordinates of the high school site are 37.958933°N, -84.216802°W. The approximate coordinates of the junior high site are 37.978917°N, -84.191337°W.

1.1 Summary of Findings

Solid Ground conducted a total of fourteen (14) soil test borings, all were located within the approximate development boundaries. Five (5) borings (B-1 through B-5) were conducted at the high school, while nine (9) borings were conducted at the junior high (B-6 through B-14).

Soil overburden generally consisted of a layer of topsoil underlain by natural soils described as Lean Clay (CL), Lean to Fat Clay (CL-CH), Clayey Gravel (GC), Silty Gravel (GM), and Well-graded Gravel (GW) with varying amounts of silt, sand, gravel, and rock fragments (limestone and shale) to auger refusal depths.

All fourteen (14) of the borings encountered auger refusal at depths between 2.0 and 13.8 feet.

2.0 Project Information

2.1 Purpose and Scope of Services

This report presents the results of a geotechnical exploration performed for the proposed replacement of existing grass athletic fields with synthetic turf fields at the referenced site. The scope of services was limited to evaluating subsurface conditions as they relate to **earthwork, subgrade preparation, drainage considerations, and support of turf field systems**.

No building foundations, slabs-on-grade, pavements, or structural elements were evaluated as part of this study. Recommendations contained herein are applicable only to earthwork and turf field construction.

Our scope of work included the following:

- A discussion of site surface conditions.

- A discussion of subsurface conditions encountered as well as a discussion of the published geologic conditions at the site.
- A summary of field and laboratory testing results including a brief review of our test procedures.
- Boring logs and laboratory tests will be summarized in the report and listed in the appendix.
- A discussion of specific geotechnical conditions and concerns which may affect the design or construction of the project.
- General recommendations for site preparation and construction of compacted fills including use of alternative construction practices.
- Groundwater management recommendations.
- Liquefaction potential and mitigation recommendations.
- A brief review of our test procedures and the results of all testing conducted.

2.2 Project Description

Based on the information provided, the project at George Rogers Clark High School is anticipated to consist of construction of a new 50-yard synthetic turf practice field, including associated grading, drainage improvements, and related site work.

The project at Robert D. Campbell Junior High is anticipated to consist of conversion of the existing natural grass field to a synthetic turf field, including associated grading and drainage modifications. Plans indicate that portions of the existing parking area adjacent to the field may require modification, including potential cut-back of the pavement and construction of a retaining wall to accommodate the proposed field improvements.

The approximate site locations are depicted below in Figures 1 and 2.

Figure 1: Approximate Site Location (High School)

Figure 2: Approximate Site Location (Junior High)

2.3 Site Conditions

Solid Ground personnel visited the site throughout the geotechnical exploration, to observe existing conditions, to help interpret the subsurface data, and to detect conditions which could affect recommendations.

The high school site is located at 2745 Boonesboro Road, Winchester, Clark County, Kentucky. The site currently consists of natural grass.

The middle school site is located at 620 Boone Avenue, Winchester, Clark County, Kentucky. The site is currently occupied by the existing football stadium.

2.4 Site Grading and Topography

Based on existing topography at the high school, site grading is anticipated to be minor. Site grading at the junior high is anticipated to be minor to moderate.

3.0 Subsurface Findings and Encountered Conditions

3.1 Review of Previous Site Development and Historical Information

Based on review of historical maps provided by the United States Geological Survey (USGS) (Figures 2 & 3) and historical imagery provided by Google Earth (Figures 4 & 5), it appears the Junior High site has remained relatively unchanged in recent years.

Aerial Imagery shows that the High School site has undergone cut and potential grading operations within the past 6 years to facilitate the construction of the adjacent ball fields and fieldhouse.

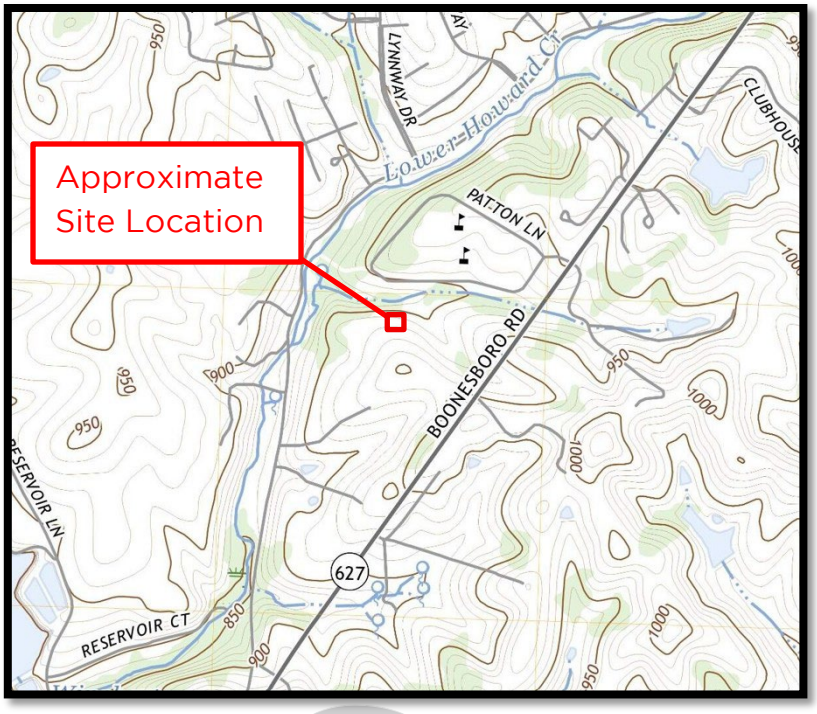


Figure 3: 2022 USGS Topographic Map of Winchester Quadrangle (High School)

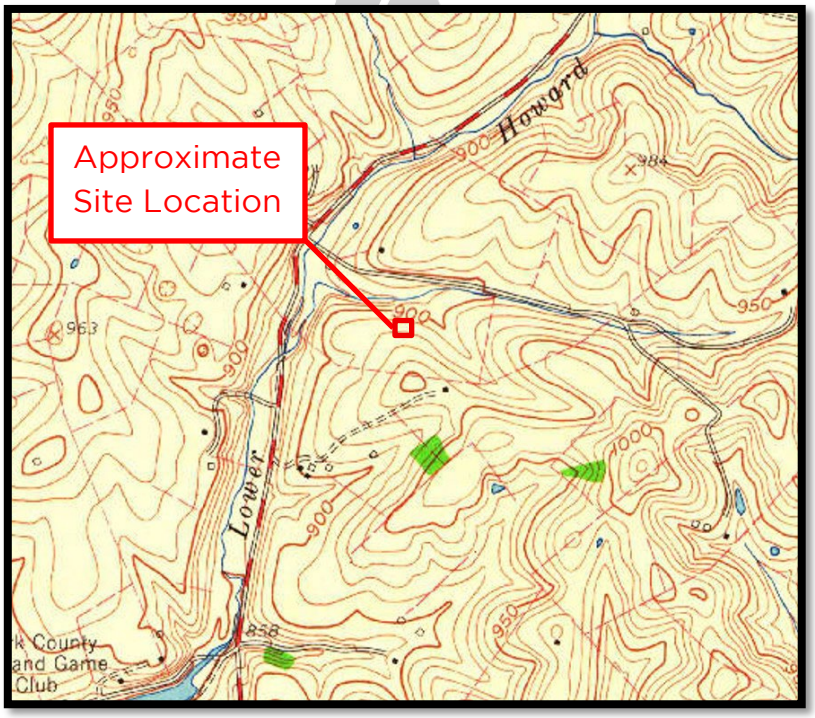


Figure 4: 1959 USGS Topographic Map of Winchester Quadrangle (High School)

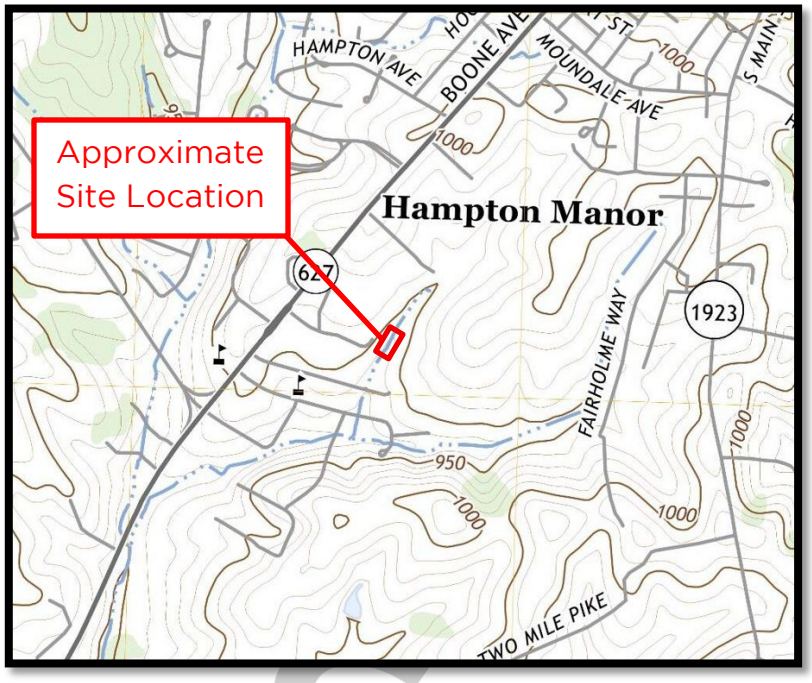


Figure 5: 2022 USGS Topographic Map of Winchester Quadrangle (Junior High)

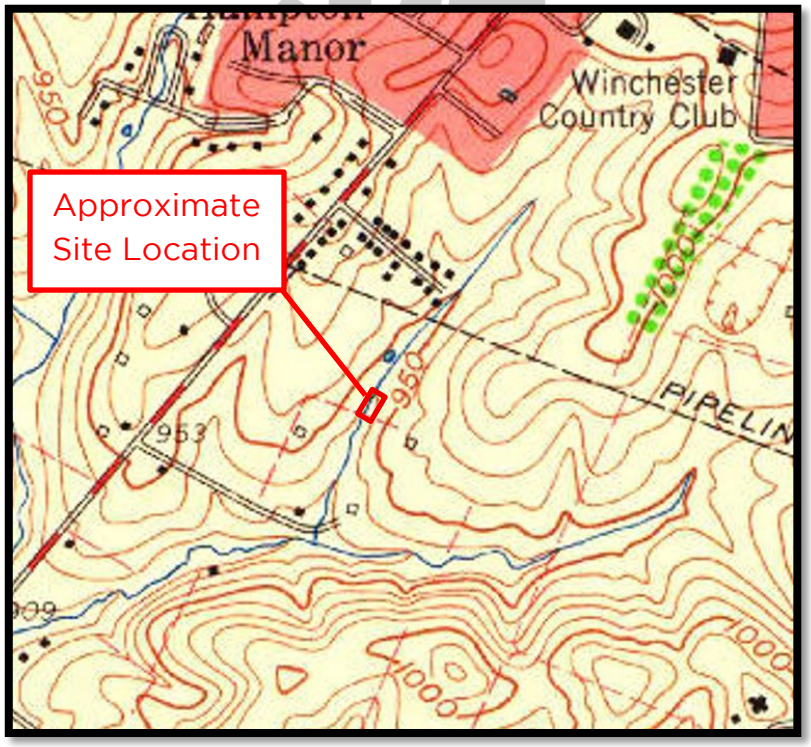


Figure 6: 1959 USGS Topographic Map of Winchester Quadrangle (Junior High)

Figure 7: 2024 Google Earth Imagery (High School)

Figure 8: 1997 Google Earth Imagery (High School)

Figure 9: 2024 Google Earth Imagery (Junior High)

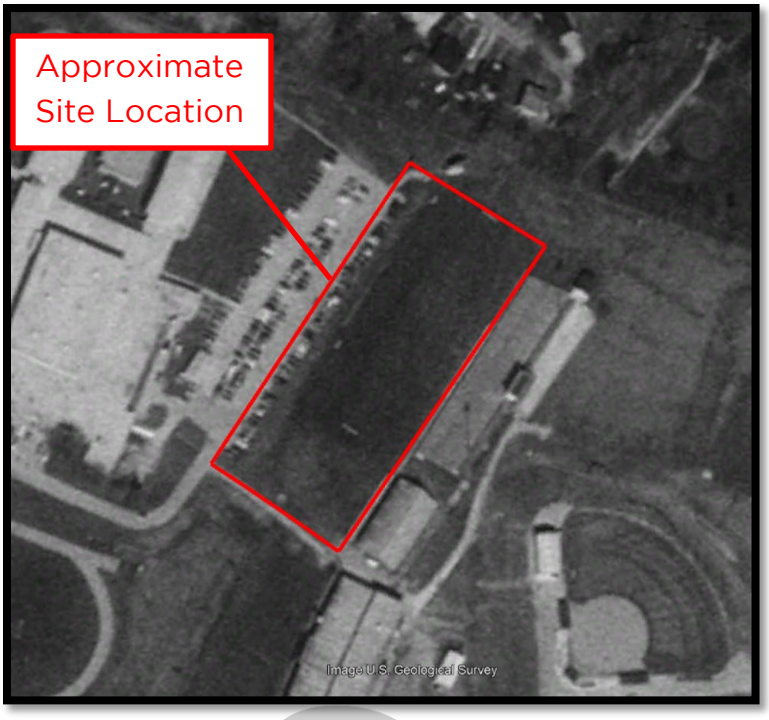


Figure 10: 1997 Google Earth Imagery (Junior High)

3.2 Published Geologic Information

Geologic information was referenced from the Kentucky Geological Survey (KGS), geologic maps of the Winchester Quadrangle, Clark County, Kentucky (Figure 11). The site at George Roger Clark High School is mainly underlain by Tanglewood Limestone No. 2 of the Upper part of Lexington Limestone. Locally, the unit is described as limestone (calcarenite), Lower to Middle Ordovician in age. A small portion of the site to the north underlain by the Brannon Member of the Upper part of Lexington Limestone. Locally, this unit is described as limestone and clay shale, Lower to Middle Ordovician in age.

3.2.1 George Rogers Clark High School

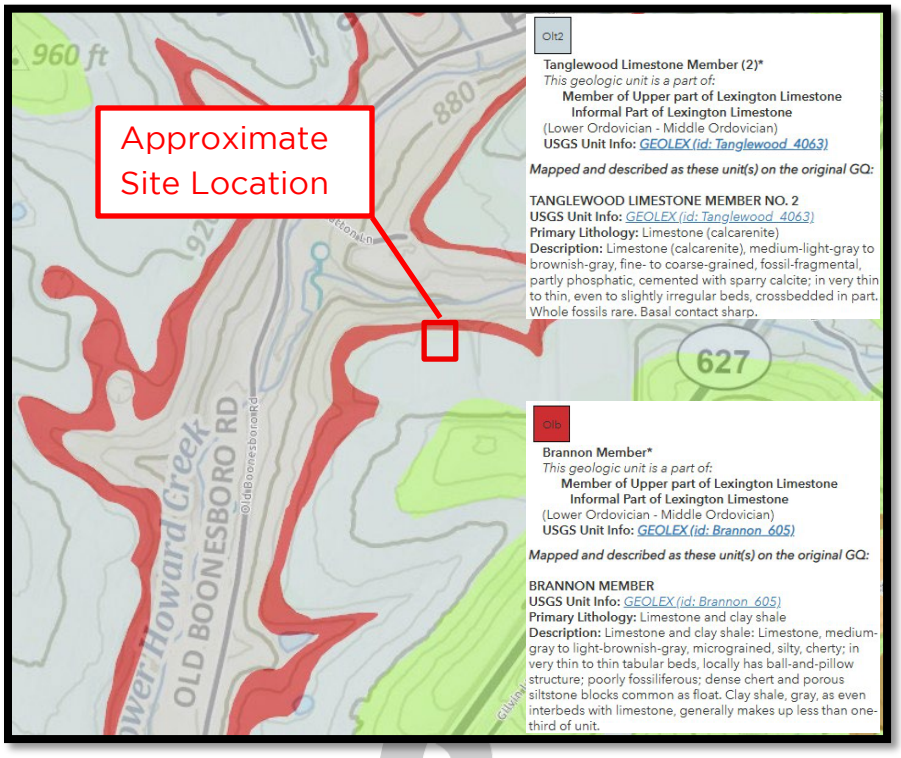


Figure 11: KGS Geologic Mapping (High School)

The KGS mapping indicates that the underlying rock unit at the high school has intense karst potential, with zero mapped sinkholes within the immediate vicinity of the site (Figure 12). Solid Ground should be contacted if any karst activity is encountered in construction for remediation recommendations.

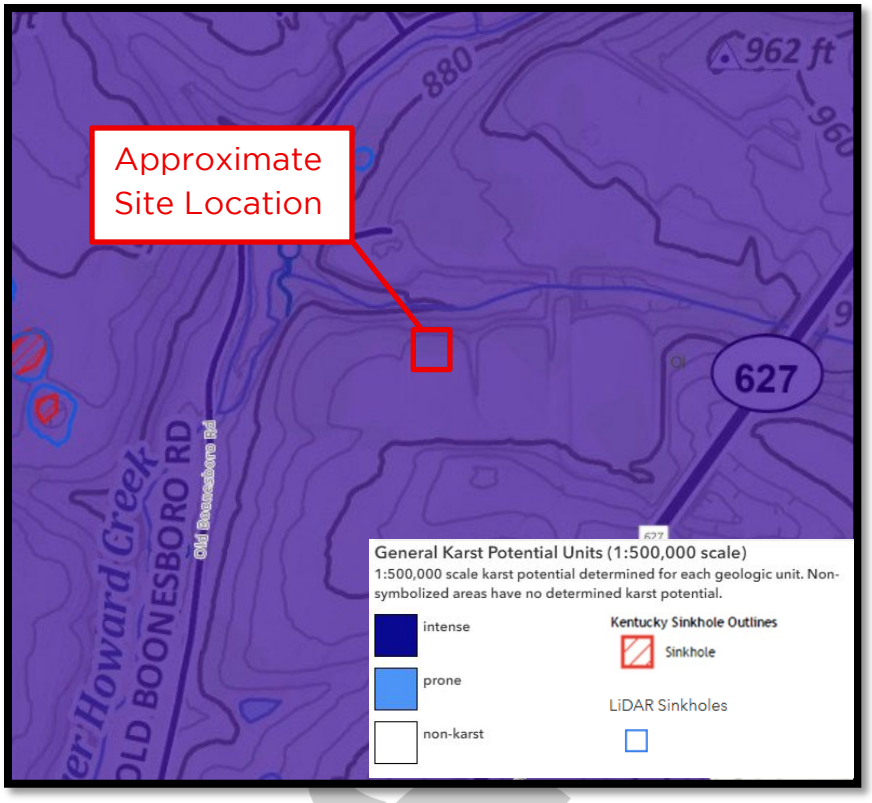


Figure 12: KGS Karst Potential Mapping (High School)

3.2.2 Robert D. Campbell Junior High

Geologic information was referenced from the Kentucky Geological Survey (KGS), geologic maps of the Winchester Quadrangle, Clark County, Kentucky (Figure 13). The site is underlain by the Upper Part of Lexington Limestone. Locally, the unit is described as limestone and shale, Lower to Middle Ordovician in age.

Figure 13: KGS Geologic Mapping (Junior High)

The KGS mapping indicates that the underlying rock unit has intense karst potential, with zero mapped sinkholes within the immediate vicinity of the site (Figure 14). Solid Ground should be contacted if any karst activity is encountered in construction for remediation recommendations.

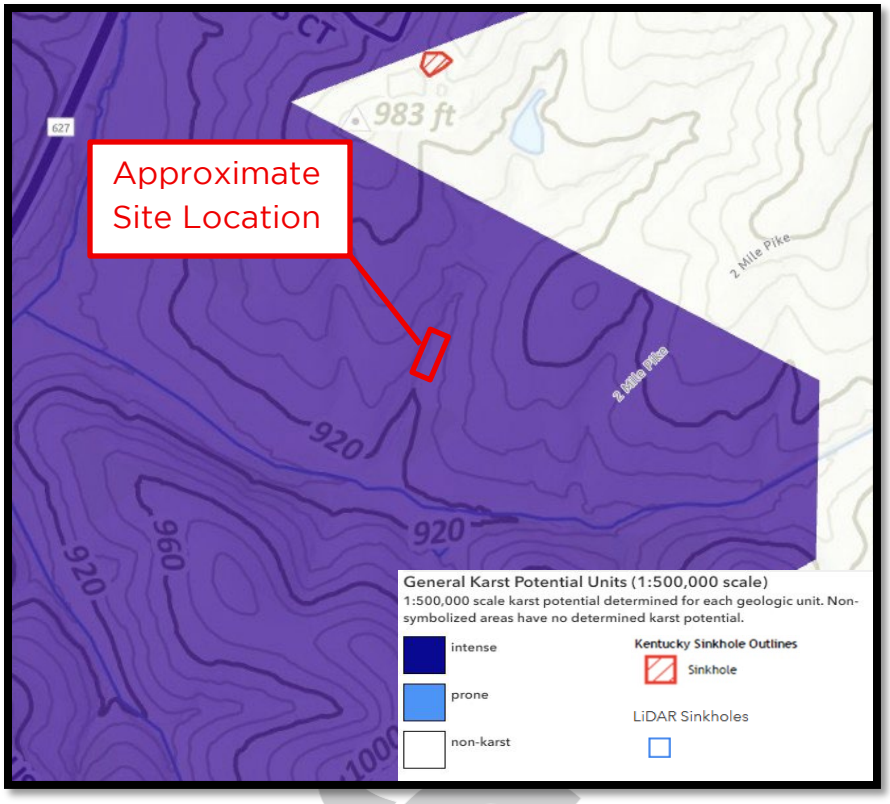


Figure 14: KGS Karst Potential Mapping (Junior High)

3.3 Subsurface Exploration Program

Solid Ground conducted a total of fourteen (14) soil test borings, all being located within the approximate development boundaries. Borings were located as close to the proposed development as site conditions allowed.

Boring surface elevations were estimated using ArcGIS utilizing LiDAR data. Therefore, the boring locations and surface elevations should be considered approximate. It should be noted that the subsurface conditions will vary between borings and the representative profile is based upon the borings drilled during the field operations. Boring locations are shown in Figures 15 and 16 below.

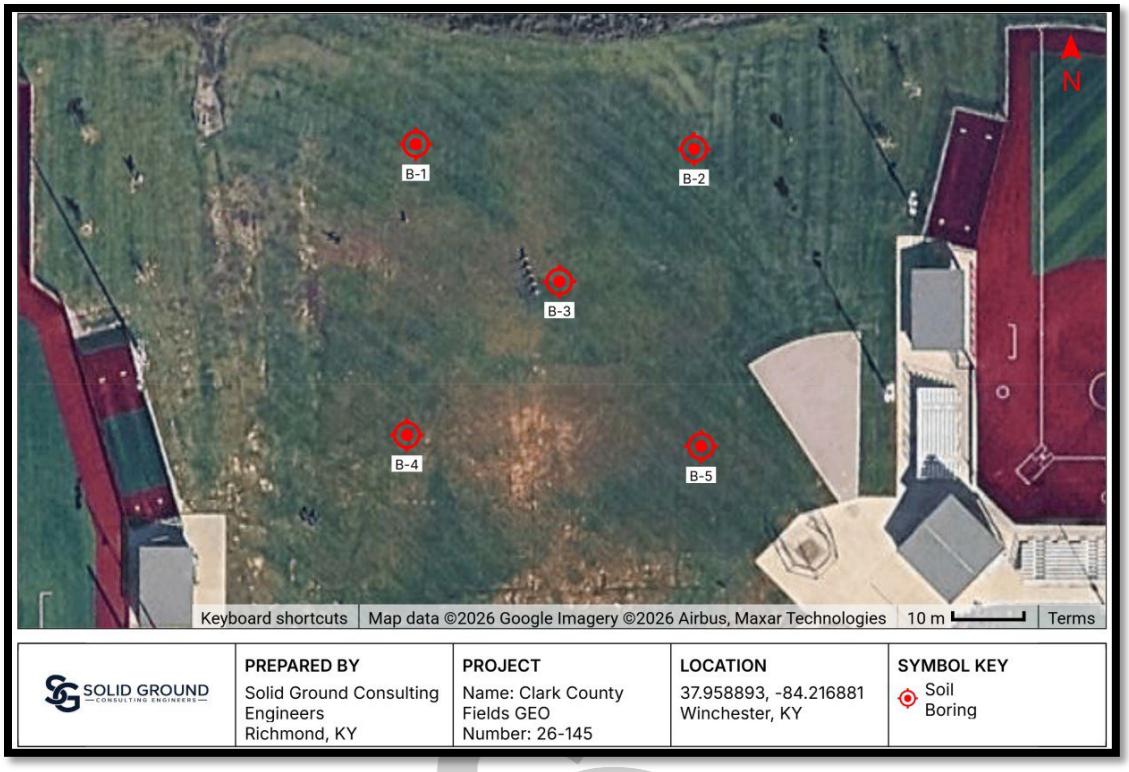


Figure 15: Approximate Boring Locations: High School

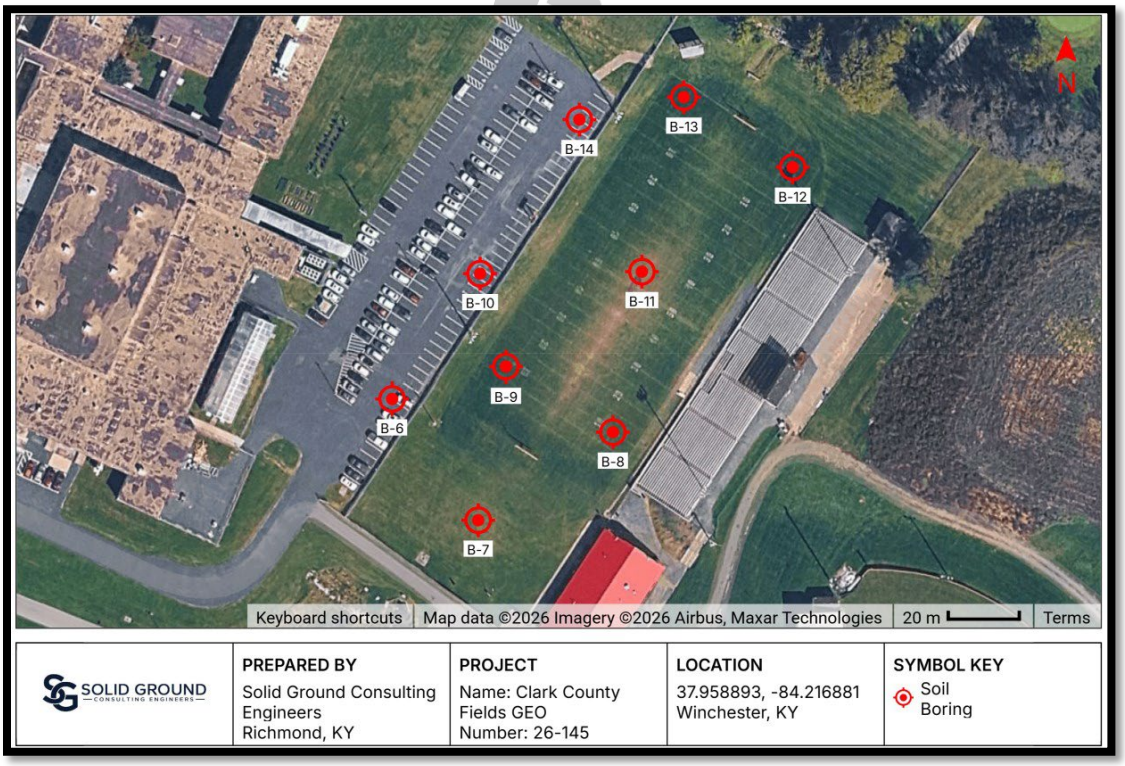


Figure 16: Approximate Boring Locations: Junior High

3.4 Subsurface Conditions

The soil samples were classified by Solid Ground personnel according to the Unified Soil Classification System (USCS ASTM D2488; USCS ASTM 2487 for select samples). A description of each soil layer is as follows.

Surficial Materials – The borings encountered a surficial layer of topsoil (4-8 inches) and asphalt (2-3 inches). It should be noted that thicknesses of these materials may vary across the sites. The thicknesses presented in this report should be considered approximate.

Natural Soils - The borings encountered natural soils underlying the surficial materials layer described as Lean Clay (CL), Lean to Fat Clay (CL-CH), Clayey Gravel (GC), Silty Gravel (GM), and Well-graded Gravel (GW) with varying amounts of silt, sand, gravel, and rock fragments (limestone and shale) to auger refusal depths.

The SPT N-values ranged from 3 to 50+ blows per foot, with a consistency of soft to hard/very dense.

Auger Refusal – All fourteen (14) of the borings encountered auger refusal at depths between 2.0 and 13.8 feet.

Auger refusal is defined herein as the depth at which advancement of the drilling tools could not be continued using conventional soil augers. Auger refusal does not necessarily indicate competent bedrock and may represent boulders, very dense gravel/cobbles, cemented zones, or pinnacled/weathered rock. No rock coring and no direct confirmation of competent bedrock elevation was performed as part of this exploration unless specifically noted on the boring logs.

Detailed descriptions and strength characteristics are included on the boring logs in Appendix A.

Groundwater – Groundwater was encountered in one (1) of the borings (B-7) at a depth of 2.5 feet. Free groundwater levels fluctuate with seasonal weather conditions and may vary. Therefore, the borings may not be representative of the actual free water levels. To achieve an accurate measurement of free groundwater levels, water wells or piezometers should be installed.

Solid Ground should be contacted if groundwater is encountered during earthwork operations. Please note, the groundwater table can fluctuate significantly which could have an impact on the subsurface soils. Table 1 summarizes our findings.

Table 1: Boring Summary

Boring Number	Approximate Surface Elevation (ft)	Boring Termination Depth (ft)	Final Elevation (ft)
B-1	910.2	9.0	901.2
B-2	911.1	10.8	900.3
B-3	911.7	6.3	905.4
B-4	912.7	2.0	910.7
B-5	913.7	7.6	906.1
B-6	952.5	10.8	941.7
B-7	942.0	8.8	933.2
B-8	944.5	5.4	939.1
B-9	944.6	10.8	933.8
B-10	951.5	13.8	937.7
B-11	946.5	10.1	936.4
B-12	944.4	5.1	939.3
B-13	944.4	5.1	939.3
B-14	951.5	7.8	943.7

Borings B-1 through B-5 were conducted at high school; B-6 through B-14 at junior high.

4.0 Geotechnical Concerns and Considerations

Based on the results of the subsurface exploration and experience with similar projects, we believe the project site is generally suitable for the proposed development. However, some concerns exist with the subsurface conditions as discussed below.

4.1 Surficial Materials

Based on the information gathered from the soil borings, the sites have a surficial layer of topsoil ranging from 4 to 8 inches, as well as a layer of asphalt ranging from 2 to 3 inches. These thicknesses are representative of conditions encountered at the boring locations only, thickness and aerial extent of the strata may vary across the site. Construction plans should adequately address stripping and the disposal of these materials prior to earthwork operations. Topsoil should only be used as fill in landscaping areas.

4.2 Construction in Cut/Fill Areas

Cut areas have the potential to be overcut, disturbing the in-situ soils to depths below proposed finished grade. Areas to receive fill are stripped of topsoil and are also sometimes disturbed to depths deeper than intended. Both cut and fill areas should be proof rolled prior to construction. Soft, loose, or wet areas should be identified and remediated in accordance with the recommendations provided in the “5.1 Earthwork” section of this report.

4.3 Construction During Wet Conditions

It is understood that potential development could occur during wet conditions. Based on experience with construction projects during wet conditions, subgrade remediation is often required. In addition, delays of earthwork operations could occur. Clays swell and silts break down when high moisture conditions are present. To stabilize the subgrade materials, drying and recompacting could be required. During wet conditions, the on-site materials may become saturated and are unable to dry in a timely manner.

Typically, remediation methods consist of undercutting soft and/or saturated soils, moisture conditioning, and recompacting or replacing with a granular stone that is “capped” with dense graded aggregate (DGA). The extent and depth of the undercut is on a case-by-case basis depending on the soil conditions. We recommend contracting Solid Ground to observe earthwork

operations. In addition, we recommend that the earthwork contractor and the design team adequately budget for remediation repairs.

4.4 Preliminary Liquefaction Potential and Settlement

Liquefaction is the phenomenon where saturated soils develop high pore-water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity where groundwater is shallow. Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow spread foundations.

Three conditions are generally required for liquefaction to occur:

1. The soil must be saturated (relatively shallow groundwater)
2. The soil must be loosely packed (low density)
3. Ground shaking of sufficient intensity must occur to function as a trigger mechanism.

Based on subsurface conditions encountered, groundwater observations at the time of drilling, and the nature of the proposed turf field improvements, the site is interpreted to present **low liquefaction potential for the intended use**. This conclusion represents a screening-level assessment only and is provided for general geotechnical characterization purposes.

4.5 Site and Foundation Drainage

Experience has shown that the onsite materials are prone to degradation during wet periods of the year and/or under heavy traffic. Surface and ground water should be controlled while the subgrade fill materials are exposed and use only enough compactive effort to achieve stability and job site requirements for compaction.

Final site grades should be sloped to promote positive drainage away from the turf fields and adjacent improvements. Surface runoff and subsurface drainage associated with the turf field system should be designed to prevent ponding, saturation of subgrade soils, and uncontrolled infiltration into underlying soils. Drainage design is beyond the scope of this geotechnical evaluation. It should be noted that drainage should be designed and constructed without impacting neighboring properties. Drainage design is beyond our scope of work.

It is imperative that dewatering be maintained during construction and after development. If positive dewatering methods are not continually applied and

maintained, the potential of remedial subgrade measures and long-term settlement is greatly increased.

We anticipate that the primary concern and difficulty during construction will be properly dewatering the site. The contractor should observe the site and understand this report.

4.6 Underground Utilities

Design and Construction plans should adequately address the concern of potential settlement of underground utilities. Please note, all excavations should adhere to applicable codes such as OSHA.

4.7 Soil Compaction Equipment

The soil compaction equipment should be selected by the type of fill anticipated for the site. We anticipate utilizing a sheepsfoot roller at the sites for the on-site materials and a smooth drum roller for dense graded aggregate fill.

4.8 Off Site Borrow Material

There is a possibility fill material may be required to achieve proposed grading. Offsite borrow material could be required. Construction plans should include this consideration as well as ensure the offsite borrow material meets the recommendations detailed in this report.

4.9 Soil Plasticity

Some of the subsurface soils were classified as lean clay and lean to fat clay. These soils can have high plasticity characteristics and be subject to volume changes with fluctuations in moisture content. While lean to fat clays were encountered in the subsurface exploration, the near-surface conditions vary across the sites and may include cohesive soils that are moisture-sensitive and subject to strength loss and deformation when disturbed or wetted. Care should still be taken to mitigate subgrade degradation and reduce subgrade remediation. Where soils within proposed subgrade/support zones exhibit PI > 15, more than 10 percent passing the No. 200 sieve, and more than 10 percent finer than 5 micrometers, additional characterization such as Expansion Index testing may be warranted to better evaluate shrink/swell potential and to refine

mitigation measures Therefore, we recommend minimal mitigation efforts consisting of the following:

- Improve site drainage to minimize prolonged exposure of subgrade soils to moisture fluctuations.
- Minimize exposure of subgrade soils to excessive wetting or drying during construction.
- Maintain stable moisture conditions within turf subgrade materials through proper grading, drainage, and construction sequencing.

4.10 Development within a Karst Region

Solution activity in areas underlain by limestone generally results from a slow process of dissolving the underlying rock units by surface runoff or rainwater. Sinkholes at the ground surface are caused from either a general raveling failure within the soil unit or by rock collapse. Either phenomenon typically result in depressions at the ground surface, which, if large enough, can be identified on topographic maps. In addition to natural causes of sinkhole development, sinkholes may form as a result of water leaking from subsurface utilities or drainage systems that allow uncontrolled infiltration into underlying soils and rock.

As previously stated, the Kentucky Geological Survey rates both sites with an intense potential for karst development. It is not possible to remove all risk associated with construction over known sinkholes or in karst areas. Our experience indicates that the limestone formations mapped underlying the site pose a high risk for solution activity and sinkhole formation. The natural rising and lowering of the ground water table and surface water migration downward through the subsurface soils can create the risk of continued soil migration into solution voids in the underlying limestone.

There is some potential for sinkholes to be encountered during construction, especially in cut areas. Solid Ground should be contacted if a solution feature or other karst features are encountered during construction. Repair methods of sinkholes and other karst features exist. When sinkholes are encountered, the common practice is to excavate the soil from within the solution feature down to hard bedrock. The two most common methods of remediation are a concrete plug or an inverted filter. The repair method will be dependent upon several factors. Therefore, Solid Ground should be contacted to provide a repair method.

We believe the risk with this development is no greater than for similar developments in the area. To further reduce the risk of unidentified sinkholes at the site would require the implementation of more sophisticated and expensive geotechnical exploration methods including borings on a tightly spaced grid or geophysical methods. However, this approach is considered expensive and is likely cost prohibitive for this stage of the project.

4.11 Soft Soils

Some soft soils were encountered in borings within the proposed development area. These soils may require subgrade remediation including undercutting and replacement utilizing engineered fill as discussed in section 5.1.2 of this report.

4.12 Silty Material

Silty material was encountered within the borings. Silty material is prone to breaking down under high moisture and repeated traffic. Care should be taken to prevent ponding of water on the site and to limit construction traffic across prepared subgrade and turf field areas.

4.13 Shallow Refusal

Shallow auger refusal was encountered in some of the borings at both sites. Based off varying shallow refusal depths and dependent on proposed site grading there is a potential for shallow rock and/or boulder excavation to occur for site grading and underground utilities. Excavation of the limestone bedrock or boulders in confined areas will require ripping tools and pneumatic hammers. The speed and ease of excavation will depend on the type of equipment, the skill of the equipment operators and the geologic structure of the material itself, such as the direction of bedding, planes of weakness, and spacing between discontinuities.

Construction plans should address the method of rock removal and the amount (if any) of rock to be hauled off the site or utilized as fill. In addition, construction plans should adequately address underground utilities as recommended in this report. We anticipate that pneumatic hammer excavation in this geology will proceed at a slower rate and should be accounted for by the contractor.

5.0 Confirmation-Dependent Recommendations

The following recommendations are based on the information gathered and subsurface conditions encountered during this limited exploration. We have developed these recommendations under the assumption that our sampling performed on the site accurately portrays conditions that are not immediately visible due to earth, rock, water, or time. It should be noted that Solid Ground cannot be held liable for fill placed or performance of the subgrade without observations to confirm that conditions in the field are consistent with inferences from the samples we obtained. **It is recommended to retain Solid Ground to observe earthwork, prior to and during fill placement.**

It is recommended to retain Solid Ground to perform construction materials testing and special inspection for the duration of construction to both maintain speed of construction and overall project costs. Please note, if earthwork construction begins during wet weather conditions there is a possibility that the schedule will be prolonged and extensive remediation, or a more robust geotechnical recommendation will be required.

5.1 Earthwork

Earthwork for the proposed turf fields shall include stripping of existing vegetation and topsoil, proof rolling of exposed subgrade, and removal of soft, pumping, or unstable soils identified during construction. Unsuitable materials shall be undercut and replaced with approved engineered fill or aggregate materials as directed by the geotechnical engineer during construction.

The limits and depth of undercutting cannot be determined precisely in advance and shall be based on observed field conditions. Typical undercut depths for soft or wet soils are commonly on the order of **1 to 3 feet**, but may vary depending on site-specific conditions encountered.

Subgrade soils shall be graded to drain and protected from excessive moisture prior to placement of turf system materials.

5.1.1 Site Preparation

- Topsoil and other surficial materials should be stripped to prepare the site for construction.
    - In-place density testing should be performed to check that the previously recommended compaction criteria have been achieved.

  - Fill placement should be monitored on a full-time basis by Solid Ground during site grading.
- After stripping and cutting operations, **the subgrade should be evaluated by Solid Ground.**
  - **Based on the variability typical of near-surface soils in this geologic setting, localized subgrade remediation should be anticipated in areas that rut, pump, weave, or deflect under proof rolling and construction traffic.**
  - **The limits and depth of localized undercut/replacement shall be determined in the field by Solid Ground based on observed conditions. Typical undercut depths for soft/wet zones are commonly on the order of 1 to 3 feet, but may be greater or lesser depending on conditions encountered.**
- Possible remediation methods may be required if the subgrade and site soils are exposed to wet weather conditions.
- The field may require stabilization prior to new fill placement. Solid Ground should be consulted to assist in selecting the most appropriate method for site conditions. These methods may consist of any or combination of the following:
  - Undercut subgrade, moisture condition, and recompact.
  - Application of compacted DGA.
  - Lime stabilization.
  - Tensar Geogrid Reinforcement.

5.1.2 Engineered Fill Placement

We anticipate fill placement to be minor. Backfill materials for engineered fill placement may consist of soil or durable crushed stone. The onsite soils are expected to meet the requirements for engineered fill. Off-site borrow material is not anticipated but cannot be ruled out without a review of the site grading plan.

Engineered fill material is defined as inorganic soils and/or engineered aggregate materials that are: (1) suitable for compaction; (2) free of organic matter, debris, and frozen material; and (3) meet the project grading/drainage performance needs. Unless otherwise approved by Solid Ground, soil engineered fill shall have **maximum particle size of 3 inches**, **LL ≤ 50**, and **PI ≤ 30**. Aggregate structural fill (stone) shall consist of durable crushed stone

meeting the project specifications and shall be placed and compacted in a manner that prevents bridging and excessive voids.

The following are recommendations for placement of soil engineered fill:

- Engineered fill should be placed in no greater than 8-inch-thick layers.
- Engineered fill should be compacted to at least 98 percent of the soil's maximum dry density as determined by the Standard Proctor Compaction test (ASTM D698).
- The moisture content of the fill material should be maintained within 2 percent (above or below) of its Standard Proctor optimum moisture content depending on the results of the Proctor tests.
- In-place density testing should be performed to check that the previously recommended compaction criteria have been achieved.
- Fill placement should be monitored on a full-time basis during site grading.

5.1.3 Protection of Earthwork

Common earthwork construction practices can leave soils exposed for long periods of time while work is performed in other areas of a site. Care should be taken during the earthwork phase to protect soils from degradation caused by sunlight, wind, precipitation, and other factors. Solid Ground recommends that any exposed soil be protected by straw, seeding, rock, or other methods if the area the soil is in will be left unattended for more than three days. Any soil left unattended or unprotected for more than three days should be re-evaluated prior to continuation of work.

5.2 Below Grade Walls

The following discussion is provided for **conceptual planning purposes only** for potential retaining walls associated with field grading. This section does **not** constitute structural design recommendations. Final wall geometry, foundation design, bearing capacity, and structural loading must be evaluated by the wall designer and may require additional geotechnical evaluation.

Based on our understanding of the project, permanent below grade walls may be utilized at the Junior High.

Equivalent Fluid Pressures (EFP)

We do not recommend undrained conditions. If undrained conditions are designed, we should be contacted to provide additional recommendations. The following table (Table 2) presents EFP for at-rest, passive and active conditions. For the drainage granular backfill, these values assume that a "full" wedge of the material is present behind the wall (Figure 17). The wedge is defined as 2 feet from the base of the wall to a 1:2 (H:V) slope upward.

Table 2 – Equivalent Fluid Pressures

Backfill Material	At Rest (PCF) Drained Condition	Active (PCF) Drained Condition	Passive (PCF) Drained Condition
Anticipated Well Graded Gravel sloping towards the wall (Φ = 38◦)	50	30	600
Anticipated in-situ soil sloping towards the wall (Φ = 23◦)	75	55	260

For designers who prefer lateral earth pressure coefficients, the following may be used for preliminary design under **drained** conditions (level backfill, no wall friction assumed), with the understanding that project-specific geometry and backfill slopes may require adjustment:

- For granular backfill with ϕ = 38°: **Ka = 0.24**, **K0 = 0.38**, **Kp = 4.20**
- For in-situ soil with ϕ = 23°: **Ka = 0.44**, **K0 = 0.61**, **Kp = 2.28**

These coefficients are provided for convenience; the EFP values in Table 2 may also be used directly.

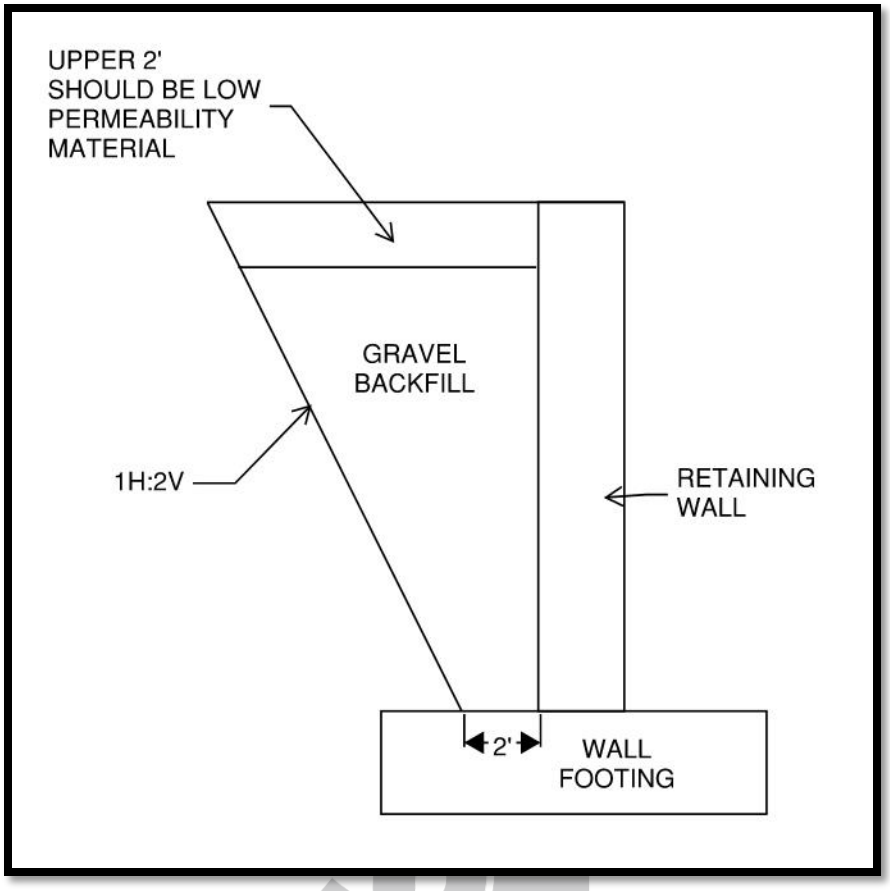


Figure 17: Retaining Wall "Wedge"

Surcharge loads from construction equipment, adjacent pavements, and nearby structures shall be included in wall design. For preliminary design, a uniform surcharge pressure may be assumed and converted to an equivalent lateral pressure using the applicable earth pressure condition (at-rest or active). Surcharge magnitude and load geometry are outside the scope of this study and should be selected by the structural designer based on project-specific loading. In addition, a factor of safety should also be included as part of the design. Both the factor of safety and surcharge loads are not accounted for in the scope of this study. A coefficient of friction between clayey soil and concrete of 0.30 can be utilized.

The following values are provided for **conceptual estimating purposes only** and shall not be used for final wall or foundation design without additional geotechnical evaluation specific to wall location, geometry, and loading.

We are assuming most of the permanent retaining walls are moderately loaded (up to 5 kips/ft). It is recommended that the below grade wall utilize shallow soil bearing foundations bearing on siff or better in-situ soil or engineered fill. **We recommend the use of a maximum net allowable bearing pressure of 2,000 PSF (pounds per square foot) for shallow foundation bearing on stiff or better in-situ soil or engineered fill.** Please contact us if retaining wall loads are expected to exceed our assumptions in this report.

Free Drainage Granular Material

A free drainage backfill material should preferably be "GW", as classified by the USCS, so that it will be free draining and exhibit an angle of shear resistance of 38 degrees or more. The material should have less than 3 percent passing the No. 200 sieve and less than 30 percent passing the No. 40 sieve. The No. 40 sieve material should be non-plastic.

Wall drainage systems should consist of a filtered granular backfill (No. 57 size crushed stone) by use of geotextile fabric. The drainage backfill should extend to within 2 feet of the ground surface. Compacted engineered fill should be placed over the drainage backfill to prevent direct surface water inflow. Compaction within five feet of walls should be accomplished by using hand compaction equipment.

Drainage Requirements

To achieve the “drained” condition, an outlet drain at the base of the wall in conjunction with a collector pipe that drains the water away from the structure should be constructed. The drains should be filtered and protected against potential erosion. **We highly recommend drainage behind the wall**. To provide drainage behind the wall, construct a vertical section of crushed stone or gravel approximately 18 inches wide behind the wall with perforated drainpipe located at the foundation level. The granular wall backfill material should be capped with 12 to 24 inches of low plasticity clay to minimize infiltration of surface water runoff behind below grade walls. As with any drainage system, the built-up water will need to be conveyed from behind the wall through a gravity drain or sump pump system.

It should be noted that groundwater dewatering methods will require a more extensive and robust wall to accommodate hydrostatic pressure in conjunction with a permanent drainage system. If drained conditions cannot

be achieved, we should be contacted immediately to provide additional recommendations.

5.3 Plan Review

To better ensure conformance of site earthwork, grading, drainage, and turf subgrade preparation with the recommendations contained in this report, Solid Ground should review the completed civil/site plans prior to construction. The plans should be made available for our review as soon as possible after completion so that we can better assist in keeping your project schedule on track.

We recommend that the following project-specific note be added to the architectural, structural, and civil plans: "The geotechnical aspects of this project, including earthwork, subgrade preparation, engineered fill placement and compaction, retaining wall backfill and drainage, and site drainage provisions affecting subgrade performance, shall be constructed in general accordance with the recommendations of the **Report of Geotechnical Exploration** prepared by Solid Ground Consulting Engineers, dated **February 28, 2026**."

5.4 Construction Monitoring and Observations

Based on experience; in order to obtain the Certificate of Occupancy for this development, you will be required to directly contract a qualified and certified inspection firm to provide special inspections.

It is advantageous to the owner to contract with Solid Ground to provide construction monitoring and observations for this project. Some of those benefits are as follows:

- As the geotechnical consultant for this project for this project, we will provide confirmation that subsurface conditions exposed during construction are substantially the same as those interpolated from our limited subsurface exploration, on which the analysis and design were based.
- The recommendations in this report are based on limited subsurface information. The nature and extent of variation across the site may not become evident until construction. If variations are then exposed, it will be necessary to re-evaluate our recommendations. If subsurface

conditions differ from those anticipated, we as the GEoR will provide recommendations if deemed necessary.

6.0 Report Limitations

This report has been prepared for the exclusive use of *Ross Tarrant Architects and Sarah Siekkinen* for specific application to the project site. Our recommendations have been prepared using generally accepted standards of geotechnical engineering practice in the Commonwealth of Kentucky. No other warranty is expressed or implied.

The recommendations provided are based on the subsurface information and other findings obtained by Solid Ground as well as information provided by you. If there are revisions to the plans for this project or if subsurface conditions detailed in this report are encountered during construction that are different than our exploration, we should be notified immediately to modify the foundation recommendations if deemed necessary. We cannot be held responsible for the impact of those conditions on the project if those impacts are not made known to us.

The recommendations contained in this report are intended solely for earthwork and synthetic turf field construction at the referenced site. Use of this report for structural design, foundation support, or other purposes not described herein is not authorized without additional geotechnical evaluation.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

7.0 Associated Geotechnical Risks

The analytical tools which are used by the geotechnical engineer in this area are generally empirical and must be used in conjunction with professional engineering judgment and experience. Therefore, the recommendations presented in this geotechnical exploration should not be considered risk-free and are not a guarantee that the proposed structure will perform as planned. The engineering recommendations presented in this are based on the information gathered during the subsurface exploration, information provided by you and experience with similar projects.

APPENDICES

APPENDIX A – BORING LOGS

APPENDIX B – LAB RESULTS

Soil Boring: B-1

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.959102, -84.217056
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 9'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 910.2'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		3-7-4	11	22.2
			Silty Lean Clay, stiff, moist, brown, trace gravel & sand & organics (CL) 2.5	2.5 ft				
			Well-graded Gravel, very stiff, trace clay and sand (GW) 5	5 ft		8-14-3	17	
5	905		**Clayey Gravel**, firm, moist, trace sand & organics (GC) 7.5	7.5 ft		8-4-5	9	
			Silty Lean Clay, very stiff, damp, brown, little gravel & sand, black mottling (CL) 9			5-9-9	18	25.2

Auger refusal at 9'

Graphics Legend

- Topsoil
- CL
- GW
- GC
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-2

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.959096, -84.216616
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 911.1'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		2-2-3	5	23.0
	910		**Silty Lean Clay**, soft to firm, moist, brown, little organics, trace sand & gravel (CL) 2.5	2.5 ft				
			Well-graded Gravel with Sand, very dense, grayish brown, (GW) 5	5 ft		50/0.4'	50	
5	905		**Sandy Lean Clay with Gravel**, very stiff, damp, brown, trace silt (CL)	7.5 ft		8-12-5	17	
			7.5': stiff, moist	10 ft		7-7-4	11	
10			10.0': hard, some gravel 10.8			4-50/0.3'	50	21.0

Auger refusal at 10.8'

Graphics Legend

- Topsoil
- GW
- CL
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-3

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.958931, -84.216829
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 6.3'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 911.7'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: % Fines	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		50/0.3'				
	910		**Lean to Fat Clay with Sand**, hard, moist, brown, little gravel, trace organics (CL-CH)	2.5 ft		2-3-5	8	79.2	49-22-27	27.1
			2.5': reddish brown							
5			5 **Sandy Lean to Fat Clay**, hard, moist, brown, some gravel, little silt (CL-CH) 6.3	5 ft		4-5-50/0.1'	50			

Auger refusal at 6.3'

Graphics Legend

- Topsoil
- CL-CH
- SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-4

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.958741, -84.217070
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 2'	

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Rig Type: Mobile B-25 Tooling: 3-1/4" Hollow Stem Auger Surface Elevation: 912.7'					
			Topsoil 0.5	0 ft		3-4-6	10	27.5
			Clayey Gravel, firm to stiff, moist, some sand, trace organics (GC) 2					

Auger refusal at 2'

Graphics Legend

Topsoil

GC

SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-5

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.958727, -84.216605
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 7.6'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 913.7'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.5	0 ft	SS	3-4-5	9	27.8
		Silty Lean Clay, moist, brown, little gravel, trace sand & organics (CL) 2.5	2.5 ft	SS	19-19-50/0.2'	69	
	910	**Well-graded Gravel**, very dense, some sand & silt, little clay (GW)	5 ft	SS	9-10-18	28	
5			7.5 ft	SS	50/0.2'	50	
		7.5': no clay 7.6					
		Auger refusal at 7.6'					

Graphics Legend

- Topsoil
- GW
- CL
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-6

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.978709, -84.191845
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 952.5'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: % Fines	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)
			Asphalt 0.3	0 ft		2-3-6	9			
			Clayey Gravel, firm, damp, brown, some sand (GC)							
	950		2.5	2.5 ft						
			Lean Clay, soft to firm, damp, brown, little sand, trace gravel, gray mottling (CL)			2-2-3	5			
				5 ft						
5			5.0': soft, moist, trace sand			WOH-2-2	4	90.4		30.7
	945			7.5 ft						
			7.5': stiff, trace sand			6-8-9	17		39-20-19	22.2
10				10 ft						
			10.0': hard 10.8			3-50/0.3'	50			

Auger refusal at 10.8'

Graphics Legend

- Asphalt
- GC
- CL
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-7

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.978406, -84.191572
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 8.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 942.0'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.7	0 ft	2-13-5	18	22.7
	940	**Silty Lean Clay**, firm, moist, brown, large limestone fragments, little sand, trace gravel, gray mottling (CL) 2.5	2.5 ft	2-14-2	16	
5	935	**Silty Lean to Fat Clay**, very stiff, wet, brown, trace sand & gravel, gray mottling (CL-CH)	5 ft	WOH-2-4	6	35.4
		7.5': hard 8.8	7.5 ft	50/0.4'	50	

Auger refusal at 8.8'

Graphics Legend

- ▽ -
- Topsoil
- CL
- CL-CH
- SS - Small Split Spoon

Water Levels

- ▽ Water encountered @ 2.5'
- ▼ -

Soil Boring: B-8

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.978626, -84.191145
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 5.4'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 944.5'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.6	0 ft		3-4-5	9	
			Silty Lean Clay, firm, damp, reddish brown, little sand, trace gravel, black mottling (CL) 2.5	2.5 ft				
	940		**Clayey Gravel**, very stiff, damp, light brown, trace silt, orange mottling (GC)			3-8-8	16	16.4
5			5.0': hard, moist 5.4	5 ft		50/0.4'	50	

Auger refusal at 5.4'

Graphics Legend

- Topsoil
- CL
- GC
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-9

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.978788, -84.191484
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 944.6'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.7	0 ft	SS	3-3-5	8	25.1
		Silty Lean Clay, firm, moist, brown, some sand, trace gravel & organics (CL) 2.5	2.5 ft				
	940	**Silty Lean to Fat Clay**, soft, moist, brown, little gravel, trace sand, gray mottling (CL-CH)		SS	1-1-2	3	
5		5.0': light brown, trace gravel	5 ft	SS	1-2-2	4	32.5
			7.5 ft	SS	WOH-2-2	4	
	935	10	10 ft				
10		**Silty Gravel**, very dense, damp, trace sand (GM) 10.8		SS	18-50/0.3'	50	

Auger refusal at 10.8'

Graphics Legend

- Topsoil
- CL
- CL-CH
- GM
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-10

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979020, -84.191566
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 13.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 951.5'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Lab: % Fines	Lab: Moisture Content (%)
		Asphalt 0.2	0 ft		5-2-3	5		
	950	**Well-graded Gravel with Sand**, loose, little clay (GW) 2.5	2.5 ft					
		Lean to Fat Clay, soft, damp, brown, trace sand, gray mottling (CL-CH)			2-1-2	3		29.1
5		5.0': moist	5 ft		WOH-2-1	3	96.3	34.5
	945		7.5 ft		2-1-2	3		
		7.5': moist, trace gravel						
10		10.0': moist, trace gravel, no mottling	10 ft		WOH-1-2	3		25.8
	940	13.8						

Auger refusal at 13.8'

Graphics Legend

- Asphalt
- GW
- CL-CH
- SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-11

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.979025, -84.191053
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.1'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 946.5'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.7	0 ft	SS	WOH-3-3	6	24.6
	945	**Silty Lean Clay**, firm, damp, brown, little sand, trace gravel & organics (CL) 2.5	2.5 ft				
		Sandy Lean Clay, firm, damp, brown, and gravel, trace silt & organics (CL) 5	5 ft	SS	3-4-4	8	
5	940	**Silty Lean to Fat Clay**, very stiff, moist, brown, little sand, trace gravel, gray & black mottling (CL-CH) 7.5	7.5 ft	SS	2-4-18	22	25.3
		Clayey Gravel, very stiff, moist, large limestone fragments (GC) 10	10 ft	SS	5-11-12	23	
10		**Weathered Rock**, (shale) 10.1			50/0.1'	50	
		Auger refusal at 10.1'					

Graphics Legend

- Topsoil
- CL
- CL-CH
- GC
- Weathered Rock
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-12

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979286, -84.190575
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 5.1'	

Rig Type	Mobile B-25
Tooling	3-1/4" Hollow Stem Auger
Surface Elevation	944.4'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)
			Topsoil 0.7	0 ft		3-5-6	11		
			Lean Clay with Gravel, stiff, damp, light brown, some sand (CL)						
			2.5': very stiff	2.5 ft		4-5-18	23	38-17-21	10.4
	940								
5			5.0': hard 5.1	5 ft		50/0.1'	50		
			Auger refusal at 5.1'						

Graphics Legend

- Topsoil
- CL
- SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-13

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979461, -84.190920
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 5.1'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 944.4'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		3-3-3	6	32.3
			Silty Lean to Fat Clay, firm, moist, reddish brown, trace gravel & organics (CL-CH) 2.5	2.5 ft		4-6-13	19	
	940		**Sandy Lean to Fat Clay**, very stiff, moist, light brown, and gravel, trace silt, gray mottling (CL-CH)					
5			5.1	5 ft		50/0.1'	50	

Auger refusal at 5.1'

Graphics Legend

- Topsoil
- CL-CH
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-14

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979405, -84.191251
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 7.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 951.5'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Asphalt 0.2	0 ft		5-2-3	5	27.0
	950		**Lean Clay with Sand**, soft to firm, moist, and gravel, trace organics, gray mottling (CL)					
			2.5	2.5 ft				
			Sandy Lean Clay, firm, damp, reddish brown, little gravel, trace silt, gray & black mottling (CL)			3-4-5	9	
				5 ft				
5			5.0': trace gravel			2-3-4	7	30.0
	945			7.5 ft				
			7.5': hard, some gravel 7.8			50/0.3'	50	

Auger refusal at 7.8'

Graphics Legend

- Asphalt
- CL
- SS - Small Split Spoon

Water Levels

- -
- -

SOLID GROUND
CONSULTING ENGINEERS

Distribution:

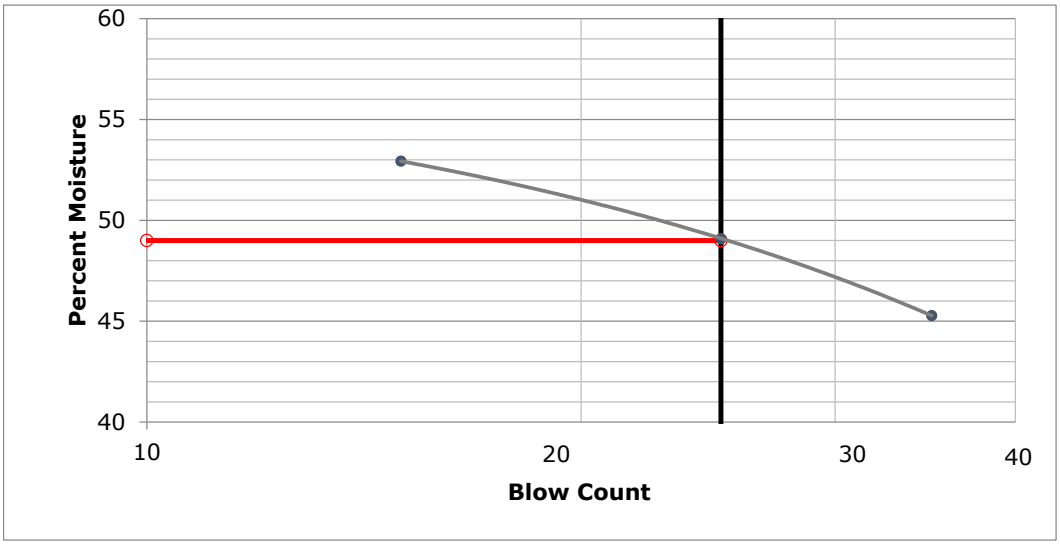
Report:

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B3	Depth	2.5'-4.0'
Soil Description	Reddish Brown LEAN to FAT CLAY with sand	Prep. Method	DRY
Date Sample Received	2/25/2026	Date Tested	2/27/2026

LIQUID LIMIT

Run Number	1	2	3	4	5	6
Tare Number	46	113	60			
Tare + Wet Soil	21.2	21.6	21.4			
Tare + Dry Soil	18.5	18.9	19.0			
Weight of Water	2.7	2.7	2.4			
Weight of Tare	13.4	13.4	13.7			
Weight of Dry Soil	5.1	5.5	5.3			
Water Content	52.9	49.1	45.3			
Number of Blows	15	25	35			

Liquid limit test was performed using manual device and metal grooving tool



LL	49
PL	22
PI	27
SYMBOL FROM PLASTICITY CHART	CL-CH
Minus #200	79.2
USCS	LEAN to FAT CLAY with sand (CL-CH)

PLASTIC LIMIT

Run Number	1	2	3	4	5	Natural Moisture
Tare Number	4	116				
Tare + Wet Soil	19.3	19.5				
Tare + Dry Soil	18.3	18.5				
Weight of Water	1.0	1.0				
Weight of Tare	13.8	13.8				
Weight of Dry Soil	4.5	4.7				
Water Content	22.2	21.3				
Plastic Limit	21.7					

Plastic limt test specimens were hand rolled

SOLID GROUND
— CONSULTING ENGINEERS —

Distribution:

Report of Percent Passing No. 200 Sieve
ASTM D1140

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B3	Depth	2.5'-4.0'
Soil Description	Reddish Brown LEAN to FAT CLAY with sand	Method A or B	B
Date Sample Received	2/25/2026	Date Tested	2/26/2026

Boring/Sample No.	B3					
Depth (From-To)	2.5'-4.0'					

#200 DATA						
Tare Number	LRP					
Wet Soil + Tare, g	719.5					
Dry Soil + Tare, g	384.9					
Wt. of Tare	319.5					
Wt. of Dry Soil, g	65.4					
Soak Time, hours	24					

% MOISTURE DATA						
Tare Number	56	119				
Wet Soil + Tare, g	69.8	68.5				
Dry Soil + Tare, g	57.5	57.1				
Wt of Water	12.3	11.4				
Wt of Tare	13.4	13.7				
Wt. of Dry Soil, g	44.1	43.4				
% Moisture	27.9	26.3				

CALCULATIONS						
Dry Wt. Before, g	314.76					
Dry Wt. After, g	65.40					
% Retained	20.8					
% Passing	79.2					

SOLID GROUND
CONSULTING ENGINEERS

Distribution:

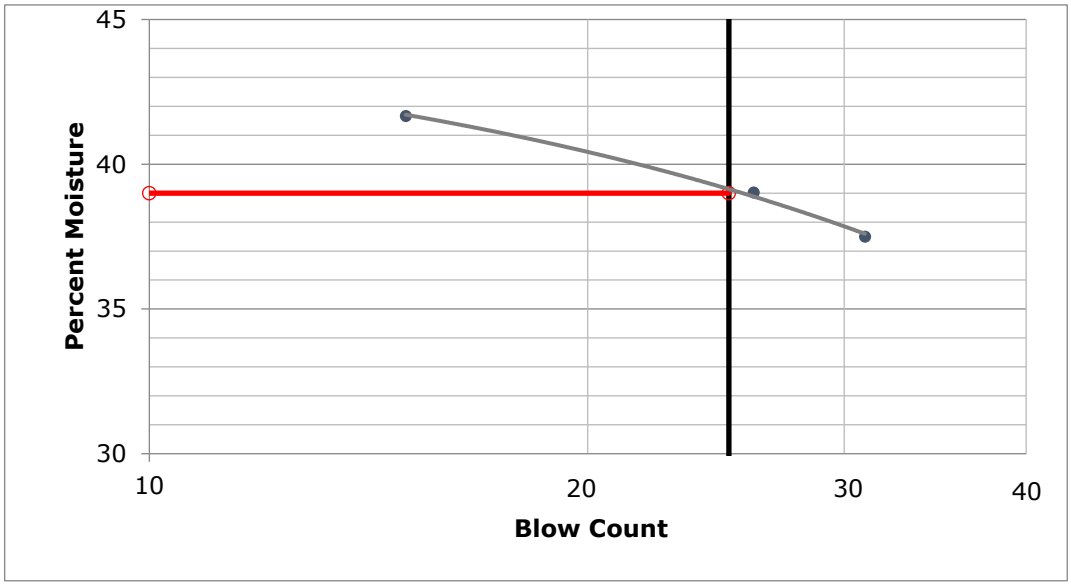
Report:

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B6	Depth	7.5'-9.0'
Soil Description	Brown LEAN CLAY	Prep. Method	DRY
Date Sample Received	2/25/2026	Date Tested	2/26/2026

LIQUID LIMIT

Run Number	1	2	3	4	5	6
Tare Number	147	13	130			
Tare + Wet Soil	20.2	19.1	20.4			
Tare + Dry Soil	18.4	17.5	18.4			
Weight of Water	1.8	1.6	2.0			
Weight of Tare	13.6	13.4	13.6			
Weight of Dry Soil	4.8	4.1	4.8			
Water Content	37.5	39.0	41.7			
Number of Blows	31	26	15			

Liquid limit test was performed using manual device and metal grooving tool



LL	39
PL	20
PI	19

SYMBOL FROM PLASTICITY CHART

CL

USCS

LEAN CLAY (CL)

PLASTIC LIMIT

Run Number	1	2	3	4	5	Natural Moisture
Tare Number	21	19				
Tare + Wet Soil	19.2	19.4				
Tare + Dry Soil	18.3	18.5				
Weight of Water	0.9	0.9				
Weight of Tare	13.8	13.8				
Weight of Dry Soil	4.5	4.7				
Water Content	20.0	19.1				
Plastic Limit	19.6					

Plastic limt test specimens were hand rolled

SOLID GROUND
— CONSULTING ENGINEERS —

Distribution:

Report of Percent Passing No. 200 Sieve
ASTM D1140

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B6	Depth	5.0'-6.5'
Soil Description	Brown LEAN CLAY	Method A or B	B
Date Sample Received	2/25/2026	Date Tested	2/26/2026

Boring/Sample No.	B6					
Depth (From-To)	5.0'-6.5'					

#200 DATA						
Tare Number	LRP					
Wet Soil + Tare, g	723.0					
Dry Soil + Tare, g	352.3					
Wt. of Tare	322.8					
Wt. of Dry Soil, g	29.5					
Soak Time, hours	24					

% MOISTURE DATA						
Tare Number	17	49				
Wet Soil + Tare, g	71.2	69.2				
Dry Soil + Tare, g	58.2	55.6				
Wt of Water	13.0	13.6				
Wt of Tare	13.5	13.4				
Wt. of Dry Soil, g	44.7	42.2				
% Moisture	29.1	32.2				

CALCULATIONS						
Dry Wt. Before, g	306.30					
Dry Wt. After, g	29.50					
% Retained	9.6					
% Passing	90.4					

SOLID GROUND
— CONSULTING ENGINEERS —

Distribution:

Report of Percent Passing No. 200 Sieve
ASTM D1140

Project Name: Clark Co Misc. | Project #: 26-145

Sample #: B10 | Depth: 5.0'-6.5'

Soil Description: Brown LEAN to FAT CLAY | Method A or B: B

Date Sample Received: 2/25/2026 | Date Tested: 2/27/2026

Boring/Sample No.	B10					
Depth (From-To)	5.0'-6.5'					

#200 DATA						
Tare Number	LRP					
Wet Soil + Tare, g	833.6					
Dry Soil + Tare, g	444.3					
Wt. of Tare	433.4					
Wt. of Dry Soil, g	10.9					
Soak Time, hours	24					

% MOISTURE DATA						
Tare Number	131	129				
Wet Soil + Tare, g	69.7	68.3				
Dry Soil + Tare, g	55.3	54.3				
Wt of Water	14.4	14.0				
Wt of Tare	13.5	13.8				
Wt. of Dry Soil, g	41.8	40.5				
% Moisture	34.4	34.6				

CALCULATIONS						
Dry Wt. Before, g	297.53					
Dry Wt. After, g	10.90					
% Retained	3.7					
% Passing	96.3					

SOLID GROUND
CONSULTING ENGINEERS

Distribution:

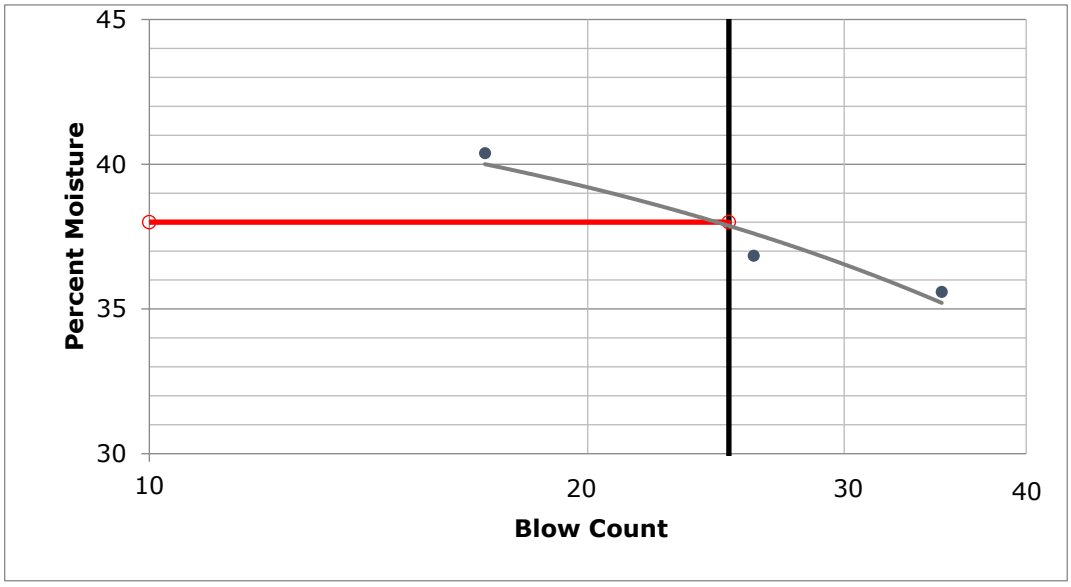
Report:

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B12	Depth	2.5'-4.0'
Soil Description	Light Brown LEAN CLAY with gravel	Prep. Method	DRY
Date Sample Received	2/25/2026	Date Tested	2/26/2026

LIQUID LIMIT

Run Number	1	2	3	4	5	6
Tare Number	145	48	52			
Tare + Wet Soil	20.8	21.1	21.5			
Tare + Dry Soil	18.7	19.0	19.4			
Weight of Water	2.1	2.1	2.1			
Weight of Tare	13.5	13.3	13.5			
Weight of Dry Soil	5.2	5.7	5.9			
Water Content	40.4	36.8	35.6			
Number of Blows	17	26	35			

Liquid limit test was performed using manual device and metal grooving tool



LL 38

PL 17

PI 21

SYMBOL FROM PLASTICITY CHART

CL

USCS

LEAN CLAY with gravel (CL)

PLASTIC LIMIT

Run Number	1	2	3	4	5	Natural Moisture
Tare Number	112	56				
Tare + Wet Soil	19.8	19.5				
Tare + Dry Soil	18.9	18.6				
Weight of Water	0.9	0.9				
Weight of Tare	13.7	13.4				
Weight of Dry Soil	5.2	5.2				
Water Content	17.3	17.3				
Plastic Limit	17.3					

Plastic limt test specimens were hand rolled

Natural Moisture Content Determination (ASTM D2216)

Project Name: Clark Co Misc. Date: 2/26/2026

Project Number: 26-145 Page: 1 of 1

Boring Number	Sample Depth (ft)	Can ID Number	Can Weight	Wet Weight + Can	Dry Weight + Can	Moisture %
B1	0.0-1.5	254	13.7	71.1	60.5	22.6
		38	13.6	70.0	59.9	21.8
B1	7.5-9.0	57	13.7	71.7	60.3	24.5
		9	13.6	68.5	57.2	25.9
B2	0.0-1.5	40	13.7	69.7	59.5	22.3
		6	13.5	70.8	59.8	23.8
B2	10.0-10.8	10	13.4	69.3	60.6	18.4
		3	13.4	68.9	58.3	23.6
B3	2.5-4.0	56	13.4	69.8	57.5	27.9
		199	13.7	68.5	57.1	26.3
B4	0.0-1.5	14	13.9	68.1	56.1	28.4
		112	13.8	68.7	57.2	26.5
B5	0.0-1.5	31	13.5	70.1	57.0	30.1
		13	13.8	70.4	58.9	25.5
B6	5.0-6.5	17	13.5	71.2	58.2	29.1
		49	13.4	69.2	55.6	32.2
B6	7.5-9.0	8	13.6	69.5	59.4	22.1
		122	13.8	71.7	61.1	22.4
B7	0.0-1.5	35	13.4	68.9	58.9	22.0
		50	13.7	68.9	58.4	23.5
B7	5.0-6.5	145	13.4	70.7	55.9	34.8
		29	13.7	68.5	54.0	36.0
B8	2.5-4.0	48	13.3	69.1	61.2	16.5
		42	13.6	69.0	61.2	16.4
B9	0.0-1.5	60	13.7	69.5	58.1	25.7
		116	13.8	69.3	58.4	24.4
B9	5.0-6.5	100	13.9	70.6	57.6	29.7
		234	13.4	69.4	54.8	35.3
B10	2.5-4.0	5	13.4	69.2	56.5	29.5
		13	13.5	68.7	56.4	28.7
B10	10.0-11.5	128	13.9	69.9	58.5	25.6
		19	13.7	69.4	57.9	26.0
B11	0.0-1.5	46	13.5	70.3	59.0	24.8
		7	13.5	69.2	58.3	24.3
B11	5.0-6.5	52	13.5	68.5	57.1	26.1
		4	13.8	70.7	59.5	24.5
B12	2.5-4.0	18	13.7	69.6	64.9	9.2
		37	13.3	71.0	65.0	11.6
B13	0.0-1.5	139	13.5	69.0	55.3	32.8
		21	13.8	69.7	56.2	31.8
B14	0.0-1.5	129	13.9	69.7	57.3	28.6
		85	13.8	68.5	57.4	25.5
B14	5.0-6.5	131	13.6	69.3	56.7	29.2
		147	13.4	69.0	55.9	30.8
B10	5.0-6.5	131	13.5	69.7	55.3	34.4
		129	13.8	68.3	54.3	34.6

SOLID GROUND
CONSULTING ENGINEERS

REPORT OF GEOTECHNICAL EXPLORATION

Proposed Clark County Field Additions

Winchester, Clark County, Kentucky

Prepared for: RossTarrant Architects

Lexington, Kentucky

February 28, 2026

TABLE OF CONTENTS

SOLID GROUND
CONSULTING ENGINEERS

February 28, 2026

c/o Ms. Sarah Siekkinen
Ross Tarrant Architects
101 Old Lafayette Avenue
Lexington, Kentucky 40502

Subject: **Report of Geotechnical Exploration**
Proposed Clark County Field Improvements
Winchester, Clark County, Kentucky
Solid Ground Project No.: 26-145

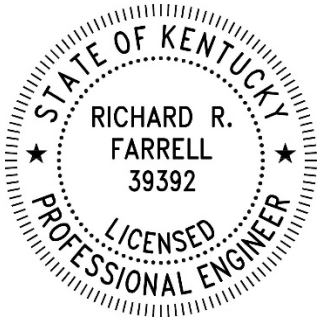
Ms. Siekkinen,

Solid Ground Consulting Engineers (Solid Ground) is pleased to present our Report of Geotechnical Exploration. This report is for the proposed Clark County Field Improvements project located in Winchester, Kentucky. The geotechnical exploration was conducted in general accordance with the scope of work agreed upon in Solid Ground Proposal No. 126225, dated November 20, 2025.

This report contains our findings and recommendations for the referenced project detailed above. Once completed, it is recommended that Solid Ground have the opportunity to review plans and specifications. In addition, it is recommended that Solid Ground be retained to perform observations during earthwork construction. Solid Ground will not be held responsible for interpretations and field observations made by others.

We appreciate the opportunity to provide our consulting services to you. We look forward to working with you on this and future projects.

Sincerely,
SOLID GROUND CONSULTING ENGINEERS,



Rich Farrell, PE
Senior Engineer
Kentucky License Number 39392

Nathaniel O'Leary M.S., GIT
Staff Geologist

1.0 Executive Summary

Solid Ground Consulting Engineers performed a geotechnical exploration in support of the proposed field improvements at George Rogers Clark High School and Robert D. Campbell Junior High, both of which are in Winchester, Clark County, Kentucky. The approximate coordinates of the high school site are 37.958933°N, -84.216802°W. The approximate coordinates of the junior high site are 37.978917°N, -84.191337°W.

1.1 Summary of Findings

Solid Ground conducted a total of fourteen (14) soil test borings, all were located within the approximate development boundaries. Five (5) borings (B-1 through B-5) were conducted at the high school, while nine (9) borings were conducted at the junior high (B-6 through B-14).

Soil overburden generally consisted of a layer of topsoil underlain by natural soils described as Lean Clay (CL), Lean to Fat Clay (CL-CH), Clayey Gravel (GC), Silty Gravel (GM), and Well-graded Gravel (GW) with varying amounts of silt, sand, gravel, and rock fragments (limestone and shale) to auger refusal depths.

All fourteen (14) of the borings encountered auger refusal at depths between 2.0 and 13.8 feet.

2.0 Project Information

2.1 Purpose and Scope of Services

This report presents the results of a geotechnical exploration performed for the proposed replacement of existing grass athletic fields with synthetic turf fields at the referenced site. The scope of services was limited to evaluating subsurface conditions as they relate to **earthwork, subgrade preparation, drainage considerations, and support of turf field systems**.

No building foundations, slabs-on-grade, pavements, or structural elements were evaluated as part of this study. Recommendations contained herein are applicable only to earthwork and turf field construction.

Our scope of work included the following:

- A discussion of site surface conditions.

- A discussion of subsurface conditions encountered as well as a discussion of the published geologic conditions at the site.
- A summary of field and laboratory testing results including a brief review of our test procedures.
- Boring logs and laboratory tests will be summarized in the report and listed in the appendix.
- A discussion of specific geotechnical conditions and concerns which may affect the design or construction of the project.
- General recommendations for site preparation and construction of compacted fills including use of alternative construction practices.
- Groundwater management recommendations.
- Liquefaction potential and mitigation recommendations.
- A brief review of our test procedures and the results of all testing conducted.

2.2 Project Description

Based on the information provided, the project at George Rogers Clark High School is anticipated to consist of construction of a new 50-yard synthetic turf practice field, including associated grading, drainage improvements, and related site work.

The project at Robert D. Campbell Junior High is anticipated to consist of conversion of the existing natural grass field to a synthetic turf field, including associated grading and drainage modifications. Plans indicate that portions of the existing parking area adjacent to the field may require modification, including potential cut-back of the pavement and construction of a retaining wall to accommodate the proposed field improvements.

The approximate site locations are depicted below in Figures 1 and 2.

Figure 1: Approximate Site Location (High School)

Figure 2: Approximate Site Location (Junior High)

2.3 Site Conditions

Solid Ground personnel visited the site throughout the geotechnical exploration, to observe existing conditions, to help interpret the subsurface data, and to detect conditions which could affect recommendations.

The high school site is located at 2745 Boonesboro Road, Winchester, Clark County, Kentucky. The site currently consists of natural grass.

The middle school site is located at 620 Boone Avenue, Winchester, Clark County, Kentucky. The site is currently occupied by the existing football stadium.

2.4 Site Grading and Topography

Based on existing topography at the high school, site grading is anticipated to be minor. Site grading at the junior high is anticipated to be minor to moderate.

3.0 Subsurface Findings and Encountered Conditions

3.1 Review of Previous Site Development and Historical Information

Based on review of historical maps provided by the United States Geological Survey (USGS) (Figures 2 & 3) and historical imagery provided by Google Earth (Figures 4 & 5), it appears the Junior High site has remained relatively unchanged in recent years.

Aerial Imagery shows that the High School site has undergone cut and potential grading operations within the past 6 years to facilitate the construction of the adjacent ball fields and fieldhouse.

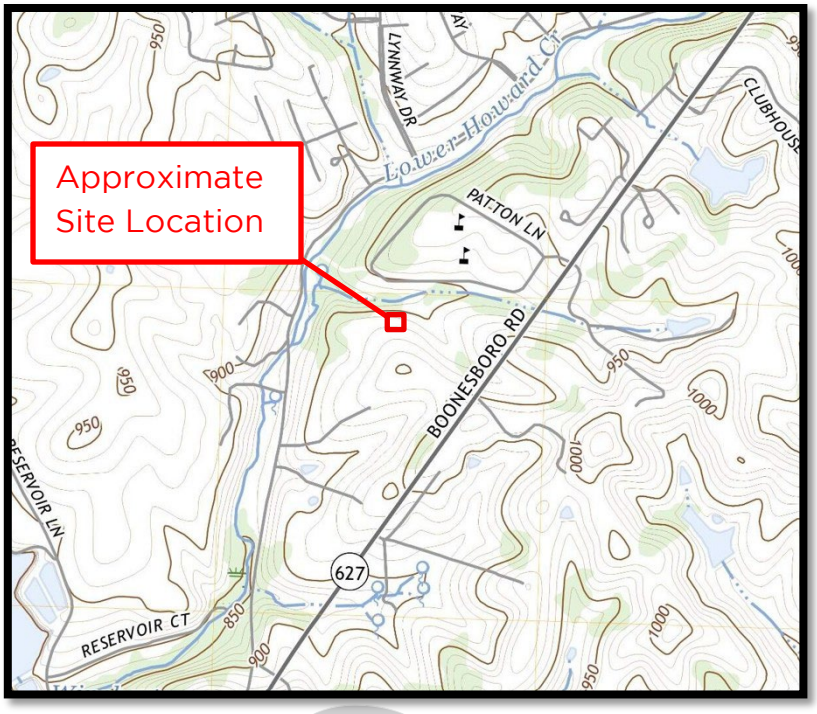


Figure 3: 2022 USGS Topographic Map of Winchester Quadrangle (High School)

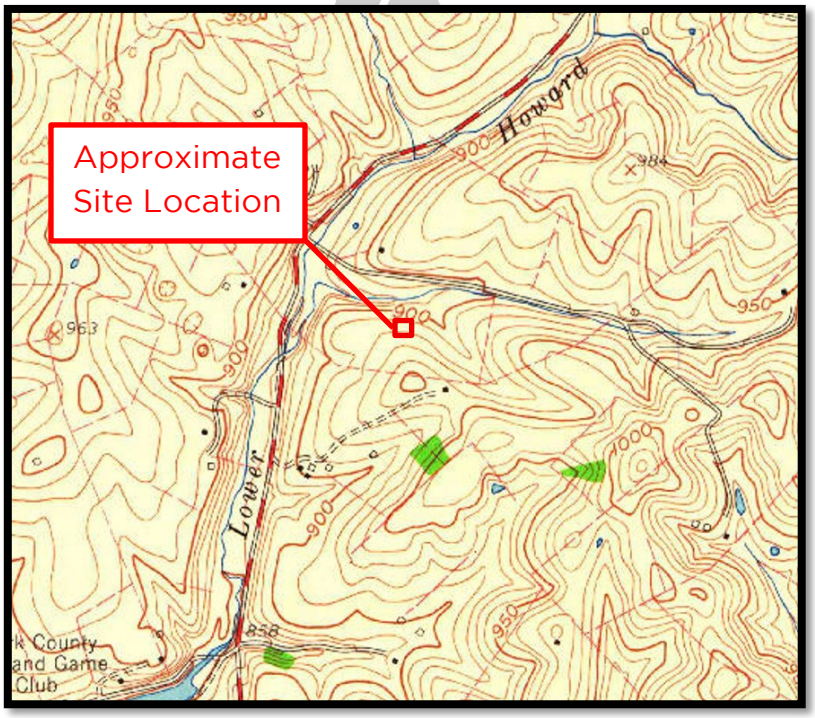


Figure 4: 1959 USGS Topographic Map of Winchester Quadrangle (High School)

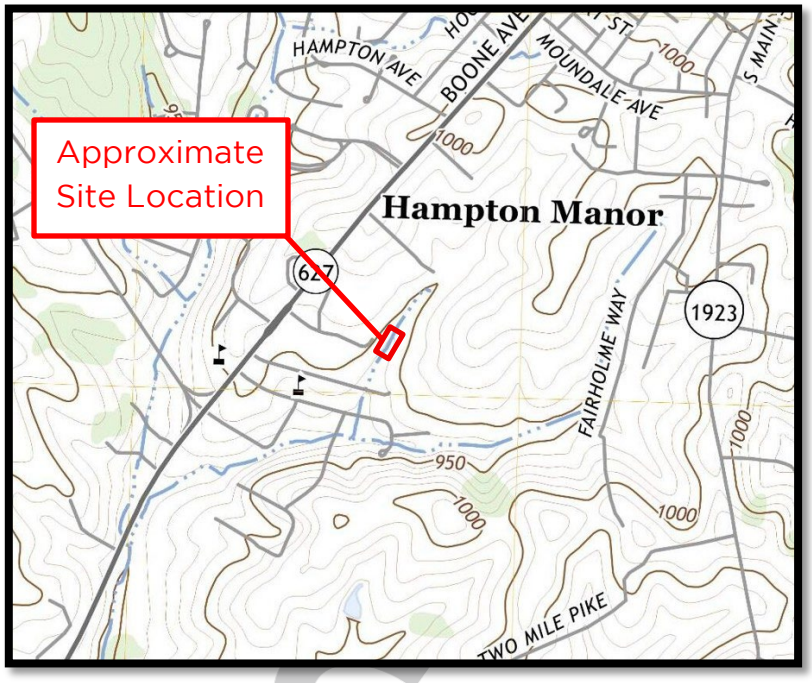


Figure 5: 2022 USGS Topographic Map of Winchester Quadrangle (Junior High)

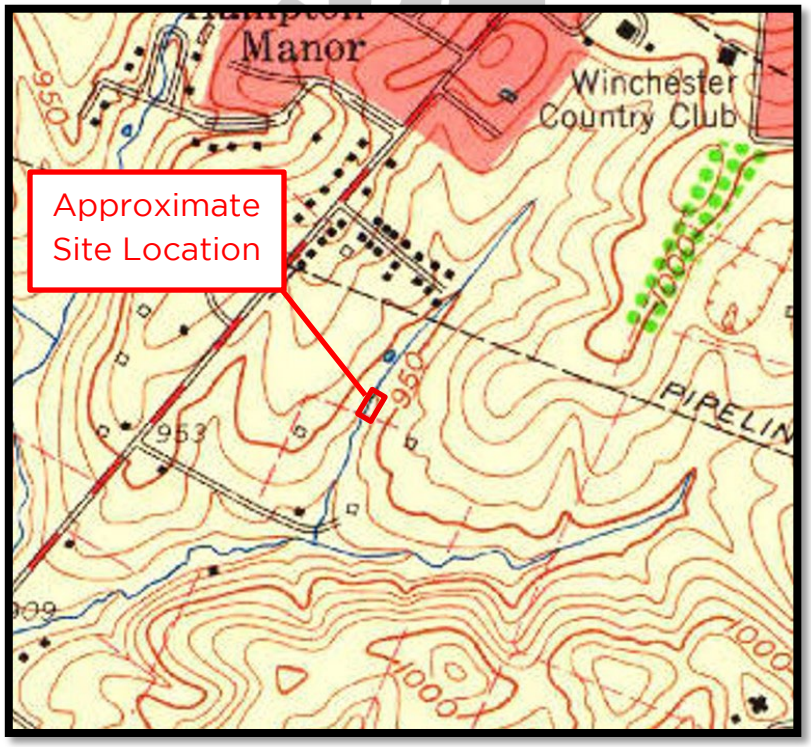


Figure 6: 1959 USGS Topographic Map of Winchester Quadrangle (Junior High)

Figure 7: 2024 Google Earth Imagery (High School)

Figure 8: 1997 Google Earth Imagery (High School)

Figure 9: 2024 Google Earth Imagery (Junior High)

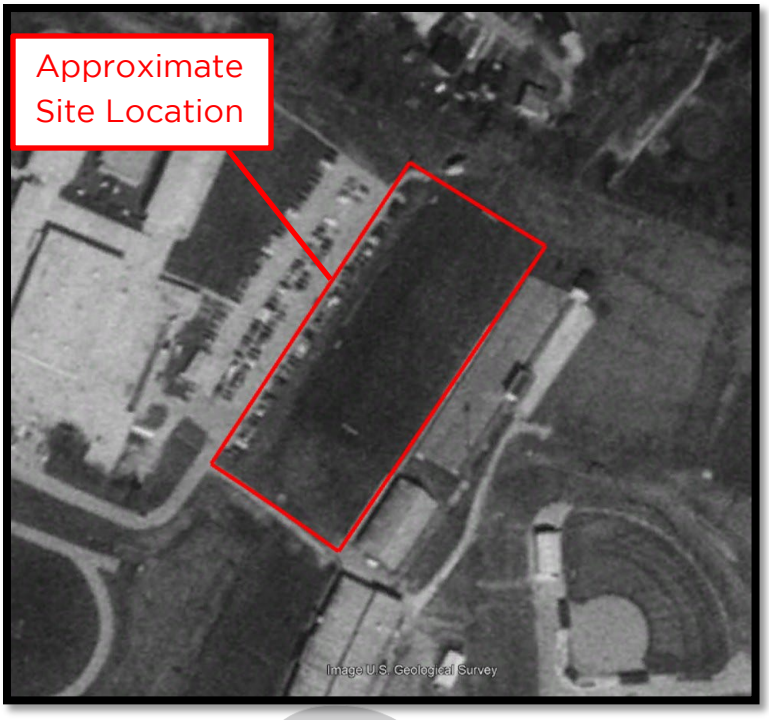


Figure 10: 1997 Google Earth Imagery (Junior High)

3.2 Published Geologic Information

Geologic information was referenced from the Kentucky Geological Survey (KGS), geologic maps of the Winchester Quadrangle, Clark County, Kentucky (Figure 11). The site at George Roger Clark High School is mainly underlain by Tanglewood Limestone No. 2 of the Upper part of Lexington Limestone. Locally, the unit is described as limestone (calcarenite), Lower to Middle Ordovician in age. A small portion of the site to the north underlain by the Brannon Member of the Upper part of Lexington Limestone. Locally, this unit is described as limestone and clay shale, Lower to Middle Ordovician in age.

3.2.1 George Rogers Clark High School

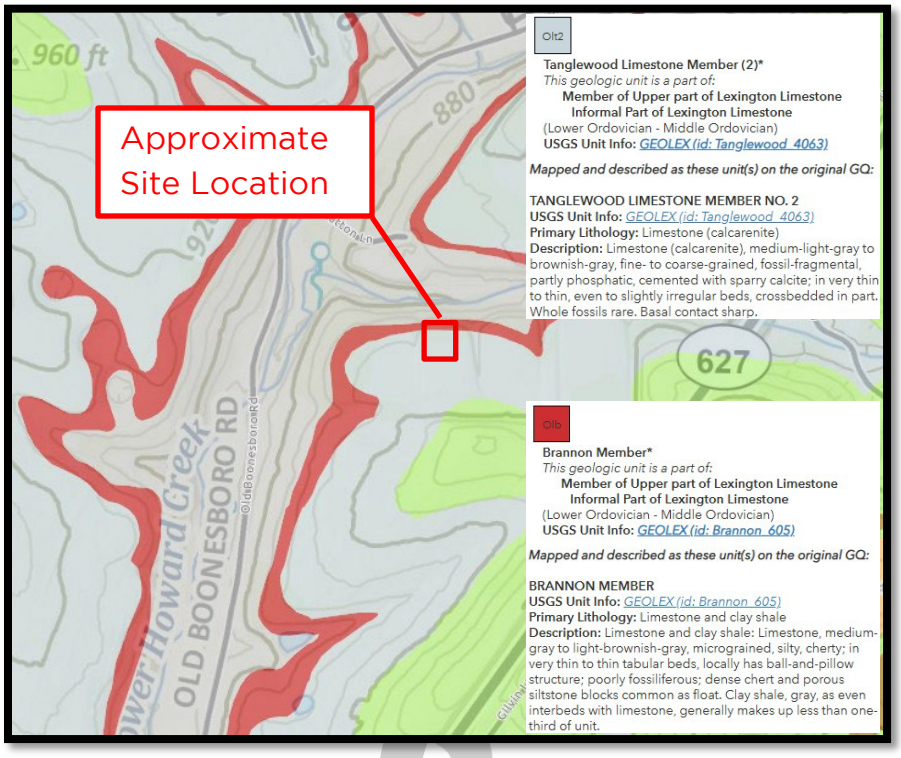


Figure 11: KGS Geologic Mapping (High School)

The KGS mapping indicates that the underlying rock unit at the high school has intense karst potential, with zero mapped sinkholes within the immediate vicinity of the site (Figure 12). Solid Ground should be contacted if any karst activity is encountered in construction for remediation recommendations.

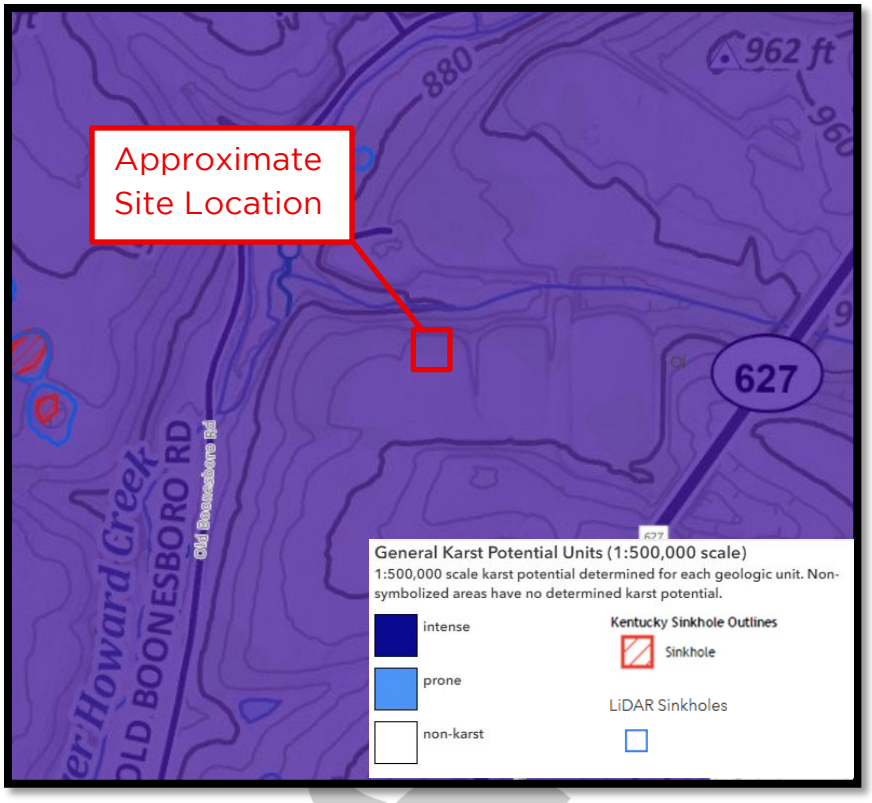


Figure 12: KGS Karst Potential Mapping (High School)

3.2.2 Robert D. Campbell Junior High

Geologic information was referenced from the Kentucky Geological Survey (KGS), geologic maps of the Winchester Quadrangle, Clark County, Kentucky (Figure 13). The site is underlain by the Upper Part of Lexington Limestone. Locally, the unit is described as limestone and shale, Lower to Middle Ordovician in age.

Figure 13: KGS Geologic Mapping (Junior High)

The KGS mapping indicates that the underlying rock unit has intense karst potential, with zero mapped sinkholes within the immediate vicinity of the site (Figure 14). Solid Ground should be contacted if any karst activity is encountered in construction for remediation recommendations.

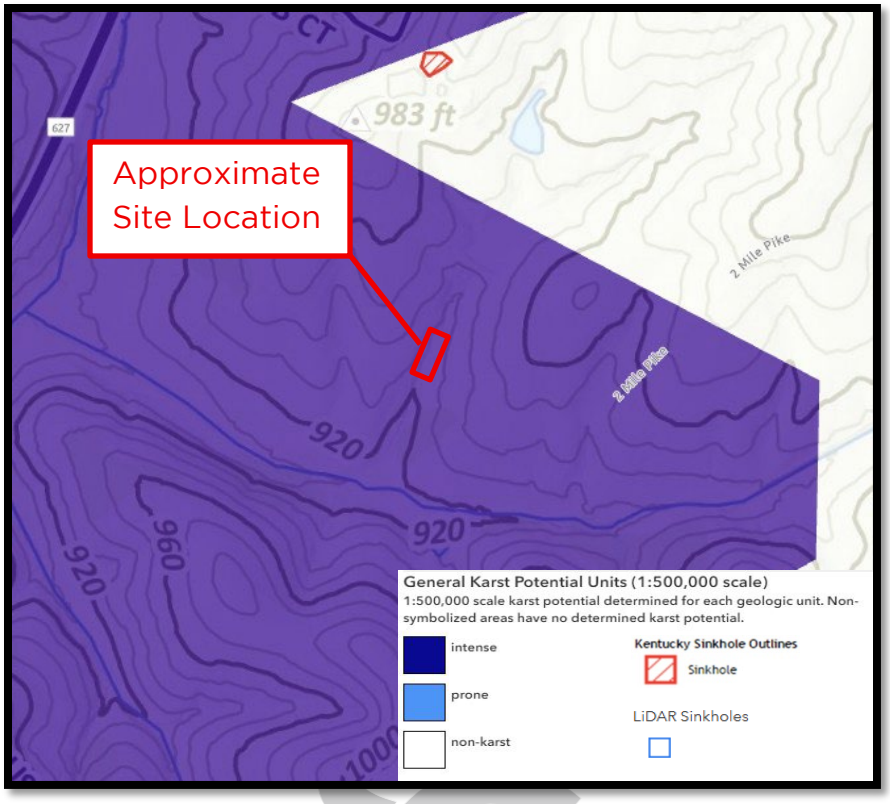


Figure 14: KGS Karst Potential Mapping (Junior High)

3.3 Subsurface Exploration Program

Solid Ground conducted a total of fourteen (14) soil test borings, all being located within the approximate development boundaries. Borings were located as close to the proposed development as site conditions allowed.

Boring surface elevations were estimated using ArcGIS utilizing LiDAR data. Therefore, the boring locations and surface elevations should be considered approximate. It should be noted that the subsurface conditions will vary between borings and the representative profile is based upon the borings drilled during the field operations. Boring locations are shown in Figures 15 and 16 below.

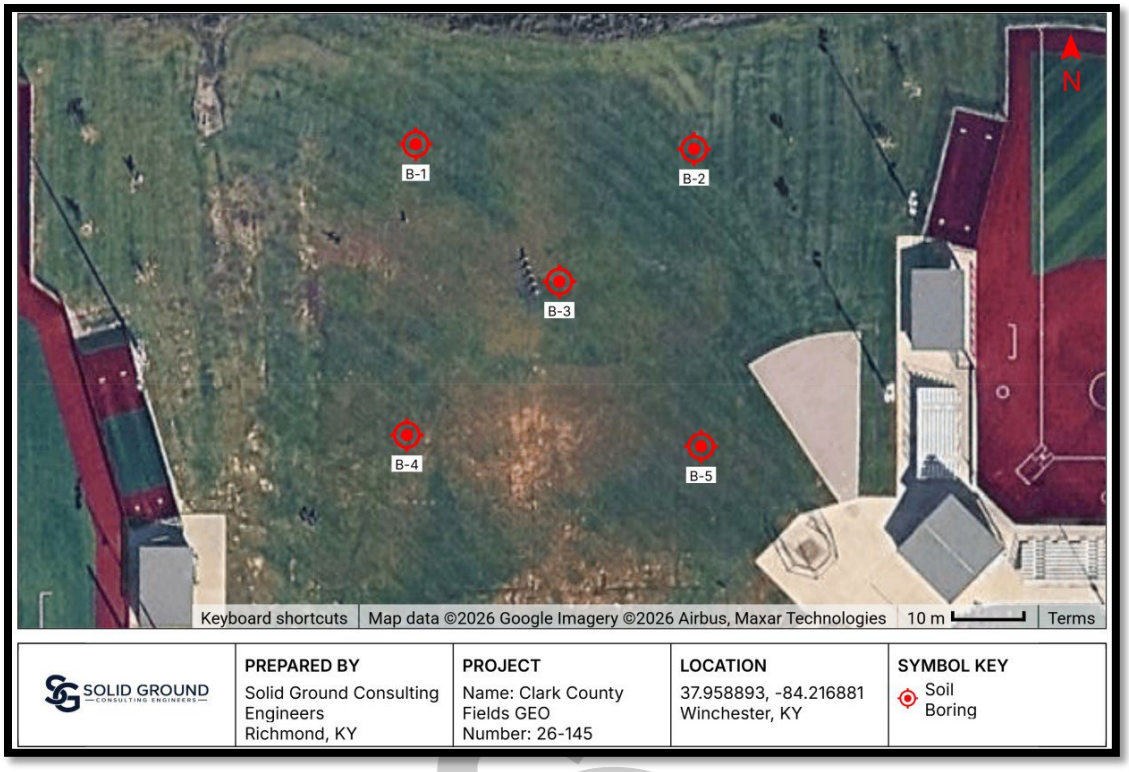


Figure 15: Approximate Boring Locations: High School

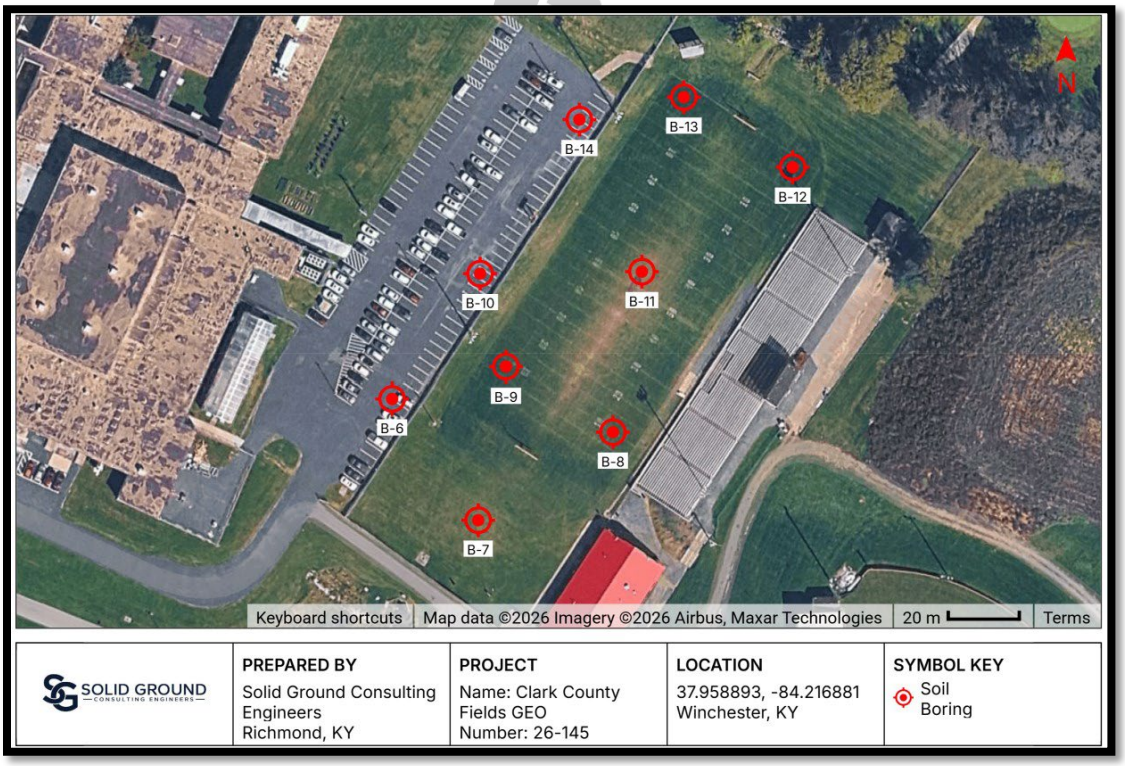


Figure 16: Approximate Boring Locations: Junior High

3.4 Subsurface Conditions

The soil samples were classified by Solid Ground personnel according to the Unified Soil Classification System (USCS ASTM D2488; USCS ASTM 2487 for select samples). A description of each soil layer is as follows.

Surficial Materials – The borings encountered a surficial layer of topsoil (4-8 inches) and asphalt (2-3 inches). It should be noted that thicknesses of these materials may vary across the sites. The thicknesses presented in this report should be considered approximate.

Natural Soils - The borings encountered natural soils underlying the surficial materials layer described as Lean Clay (CL), Lean to Fat Clay (CL-CH), Clayey Gravel (GC), Silty Gravel (GM), and Well-graded Gravel (GW) with varying amounts of silt, sand, gravel, and rock fragments (limestone and shale) to auger refusal depths.

The SPT N-values ranged from 3 to 50+ blows per foot, with a consistency of soft to hard/very dense.

Auger Refusal – All fourteen (14) of the borings encountered auger refusal at depths between 2.0 and 13.8 feet.

Auger refusal is defined herein as the depth at which advancement of the drilling tools could not be continued using conventional soil augers. Auger refusal does not necessarily indicate competent bedrock and may represent boulders, very dense gravel/cobbles, cemented zones, or pinnacled/weathered rock. No rock coring and no direct confirmation of competent bedrock elevation was performed as part of this exploration unless specifically noted on the boring logs.

Detailed descriptions and strength characteristics are included on the boring logs in Appendix A.

Groundwater – Groundwater was encountered in one (1) of the borings (B-7) at a depth of 2.5 feet. Free groundwater levels fluctuate with seasonal weather conditions and may vary. Therefore, the borings may not be representative of the actual free water levels. To achieve an accurate measurement of free groundwater levels, water wells or piezometers should be installed.

Solid Ground should be contacted if groundwater is encountered during earthwork operations. Please note, the groundwater table can fluctuate significantly which could have an impact on the subsurface soils. Table 1 summarizes our findings.

Table 1: Boring Summary

Boring Number	Approximate Surface Elevation (ft)	Boring Termination Depth (ft)	Final Elevation (ft)
B-1	910.2	9.0	901.2
B-2	911.1	10.8	900.3
B-3	911.7	6.3	905.4
B-4	912.7	2.0	910.7
B-5	913.7	7.6	906.1
B-6	952.5	10.8	941.7
B-7	942.0	8.8	933.2
B-8	944.5	5.4	939.1
B-9	944.6	10.8	933.8
B-10	951.5	13.8	937.7
B-11	946.5	10.1	936.4
B-12	944.4	5.1	939.3
B-13	944.4	5.1	939.3
B-14	951.5	7.8	943.7

Borings B-1 through B-5 were conducted at high school; B-6 through B-14 at junior high.

4.0 Geotechnical Concerns and Considerations

Based on the results of the subsurface exploration and experience with similar projects, we believe the project site is generally suitable for the proposed development. However, some concerns exist with the subsurface conditions as discussed below.

4.1 Surficial Materials

Based on the information gathered from the soil borings, the sites have a surficial layer of topsoil ranging from 4 to 8 inches, as well as a layer of asphalt ranging from 2 to 3 inches. These thicknesses are representative of conditions encountered at the boring locations only, thickness and aerial extent of the strata may vary across the site. Construction plans should adequately address stripping and the disposal of these materials prior to earthwork operations. Topsoil should only be used as fill in landscaping areas.

4.2 Construction in Cut/Fill Areas

Cut areas have the potential to be overcut, disturbing the in-situ soils to depths below proposed finished grade. Areas to receive fill are stripped of topsoil and are also sometimes disturbed to depths deeper than intended. Both cut and fill areas should be proof rolled prior to construction. Soft, loose, or wet areas should be identified and remediated in accordance with the recommendations provided in the “5.1 Earthwork” section of this report.

4.3 Construction During Wet Conditions

It is understood that potential development could occur during wet conditions. Based on experience with construction projects during wet conditions, subgrade remediation is often required. In addition, delays of earthwork operations could occur. Clays swell and silts break down when high moisture conditions are present. To stabilize the subgrade materials, drying and recompacting could be required. During wet conditions, the on-site materials may become saturated and are unable to dry in a timely manner.

Typically, remediation methods consist of undercutting soft and/or saturated soils, moisture conditioning, and recompacting or replacing with a granular stone that is “capped” with dense graded aggregate (DGA). The extent and depth of the undercut is on a case-by-case basis depending on the soil conditions. We recommend contracting Solid Ground to observe earthwork

operations. In addition, we recommend that the earthwork contractor and the design team adequately budget for remediation repairs.

4.4 Preliminary Liquefaction Potential and Settlement

Liquefaction is the phenomenon where saturated soils develop high pore-water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismicity where groundwater is shallow. Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow spread foundations.

Three conditions are generally required for liquefaction to occur:

1. The soil must be saturated (relatively shallow groundwater)
2. The soil must be loosely packed (low density)
3. Ground shaking of sufficient intensity must occur to function as a trigger mechanism.

Based on subsurface conditions encountered, groundwater observations at the time of drilling, and the nature of the proposed turf field improvements, the site is interpreted to present **low liquefaction potential for the intended use**. This conclusion represents a screening-level assessment only and is provided for general geotechnical characterization purposes.

4.5 Site and Foundation Drainage

Experience has shown that the onsite materials are prone to degradation during wet periods of the year and/or under heavy traffic. Surface and ground water should be controlled while the subgrade fill materials are exposed and use only enough compactive effort to achieve stability and job site requirements for compaction.

Final site grades should be sloped to promote positive drainage away from the turf fields and adjacent improvements. Surface runoff and subsurface drainage associated with the turf field system should be designed to prevent ponding, saturation of subgrade soils, and uncontrolled infiltration into underlying soils. Drainage design is beyond the scope of this geotechnical evaluation. It should be noted that drainage should be designed and constructed without impacting neighboring properties. Drainage design is beyond our scope of work.

It is imperative that dewatering be maintained during construction and after development. If positive dewatering methods are not continually applied and

maintained, the potential of remedial subgrade measures and long-term settlement is greatly increased.

We anticipate that the primary concern and difficulty during construction will be properly dewatering the site. The contractor should observe the site and understand this report.

4.6 Underground Utilities

Design and Construction plans should adequately address the concern of potential settlement of underground utilities. Please note, all excavations should adhere to applicable codes such as OSHA.

4.7 Soil Compaction Equipment

The soil compaction equipment should be selected by the type of fill anticipated for the site. We anticipate utilizing a sheepsfoot roller at the sites for the on-site materials and a smooth drum roller for dense graded aggregate fill.

4.8 Off Site Borrow Material

There is a possibility fill material may be required to achieve proposed grading. Offsite borrow material could be required. Construction plans should include this consideration as well as ensure the offsite borrow material meets the recommendations detailed in this report.

4.9 Soil Plasticity

Some of the subsurface soils were classified as lean clay and lean to fat clay. These soils can have high plasticity characteristics and be subject to volume changes with fluctuations in moisture content. While lean to fat clays were encountered in the subsurface exploration, the near-surface conditions vary across the sites and may include cohesive soils that are moisture-sensitive and subject to strength loss and deformation when disturbed or wetted. Care should still be taken to mitigate subgrade degradation and reduce subgrade remediation. Where soils within proposed subgrade/support zones exhibit PI > 15, more than 10 percent passing the No. 200 sieve, and more than 10 percent finer than 5 micrometers, additional characterization such as Expansion Index testing may be warranted to better evaluate shrink/swell potential and to refine

mitigation measures Therefore, we recommend minimal mitigation efforts consisting of the following:

- Improve site drainage to minimize prolonged exposure of subgrade soils to moisture fluctuations.
- Minimize exposure of subgrade soils to excessive wetting or drying during construction.
- Maintain stable moisture conditions within turf subgrade materials through proper grading, drainage, and construction sequencing.

4.10 Development within a Karst Region

Solution activity in areas underlain by limestone generally results from a slow process of dissolving the underlying rock units by surface runoff or rainwater. Sinkholes at the ground surface are caused from either a general raveling failure within the soil unit or by rock collapse. Either phenomenon typically result in depressions at the ground surface, which, if large enough, can be identified on topographic maps. In addition to natural causes of sinkhole development, sinkholes may form as a result of water leaking from subsurface utilities or drainage systems that allow uncontrolled infiltration into underlying soils and rock.

As previously stated, the Kentucky Geological Survey rates both sites with an intense potential for karst development. It is not possible to remove all risk associated with construction over known sinkholes or in karst areas. Our experience indicates that the limestone formations mapped underlying the site pose a high risk for solution activity and sinkhole formation. The natural rising and lowering of the ground water table and surface water migration downward through the subsurface soils can create the risk of continued soil migration into solution voids in the underlying limestone.

There is some potential for sinkholes to be encountered during construction, especially in cut areas. Solid Ground should be contacted if a solution feature or other karst features are encountered during construction. Repair methods of sinkholes and other karst features exist. When sinkholes are encountered, the common practice is to excavate the soil from within the solution feature down to hard bedrock. The two most common methods of remediation are a concrete plug or an inverted filter. The repair method will be dependent upon several factors. Therefore, Solid Ground should be contacted to provide a repair method.

We believe the risk with this development is no greater than for similar developments in the area. To further reduce the risk of unidentified sinkholes at the site would require the implementation of more sophisticated and expensive geotechnical exploration methods including borings on a tightly spaced grid or geophysical methods. However, this approach is considered expensive and is likely cost prohibitive for this stage of the project.

4.11 Soft Soils

Some soft soils were encountered in borings within the proposed development area. These soils may require subgrade remediation including undercutting and replacement utilizing engineered fill as discussed in section 5.1.2 of this report.

4.12 Silty Material

Silty material was encountered within the borings. Silty material is prone to breaking down under high moisture and repeated traffic. Care should be taken to prevent ponding of water on the site and to limit construction traffic across prepared subgrade and turf field areas.

4.13 Shallow Refusal

Shallow auger refusal was encountered in some of the borings at both sites. Based off varying shallow refusal depths and dependent on proposed site grading there is a potential for shallow rock and/or boulder excavation to occur for site grading and underground utilities. Excavation of the limestone bedrock or boulders in confined areas will require ripping tools and pneumatic hammers. The speed and ease of excavation will depend on the type of equipment, the skill of the equipment operators and the geologic structure of the material itself, such as the direction of bedding, planes of weakness, and spacing between discontinuities.

Construction plans should address the method of rock removal and the amount (if any) of rock to be hauled off the site or utilized as fill. In addition, construction plans should adequately address underground utilities as recommended in this report. We anticipate that pneumatic hammer excavation in this geology will proceed at a slower rate and should be accounted for by the contractor.

5.0 Confirmation-Dependent Recommendations

The following recommendations are based on the information gathered and subsurface conditions encountered during this limited exploration. We have developed these recommendations under the assumption that our sampling performed on the site accurately portrays conditions that are not immediately visible due to earth, rock, water, or time. It should be noted that Solid Ground cannot be held liable for fill placed or performance of the subgrade without observations to confirm that conditions in the field are consistent with inferences from the samples we obtained. **It is recommended to retain Solid Ground to observe earthwork, prior to and during fill placement.**

It is recommended to retain Solid Ground to perform construction materials testing and special inspection for the duration of construction to both maintain speed of construction and overall project costs. Please note, if earthwork construction begins during wet weather conditions there is a possibility that the schedule will be prolonged and extensive remediation, or a more robust geotechnical recommendation will be required.

5.1 Earthwork

Earthwork for the proposed turf fields shall include stripping of existing vegetation and topsoil, proof rolling of exposed subgrade, and removal of soft, pumping, or unstable soils identified during construction. Unsuitable materials shall be undercut and replaced with approved engineered fill or aggregate materials as directed by the geotechnical engineer during construction.

The limits and depth of undercutting cannot be determined precisely in advance and shall be based on observed field conditions. Typical undercut depths for soft or wet soils are commonly on the order of **1 to 3 feet**, but may vary depending on site-specific conditions encountered.

Subgrade soils shall be graded to drain and protected from excessive moisture prior to placement of turf system materials.

5.1.1 Site Preparation

- Topsoil and other surficial materials should be stripped to prepare the site for construction.
    - In-place density testing should be performed to check that the previously recommended compaction criteria have been achieved.

  - Fill placement should be monitored on a full-time basis by Solid Ground during site grading.
- After stripping and cutting operations, **the subgrade should be evaluated by Solid Ground.**
  - **Based on the variability typical of near-surface soils in this geologic setting, localized subgrade remediation should be anticipated in areas that rut, pump, weave, or deflect under proof rolling and construction traffic.**
  - **The limits and depth of localized undercut/replacement shall be determined in the field by Solid Ground based on observed conditions. Typical undercut depths for soft/wet zones are commonly on the order of 1 to 3 feet, but may be greater or lesser depending on conditions encountered.**
- Possible remediation methods may be required if the subgrade and site soils are exposed to wet weather conditions.
- The field may require stabilization prior to new fill placement. Solid Ground should be consulted to assist in selecting the most appropriate method for site conditions. These methods may consist of any or combination of the following:
  - Undercut subgrade, moisture condition, and recompact.
  - Application of compacted DGA.
  - Lime stabilization.
  - Tensar Geogrid Reinforcement.

5.1.2 Engineered Fill Placement

We anticipate fill placement to be minor. Backfill materials for engineered fill placement may consist of soil or durable crushed stone. The onsite soils are expected to meet the requirements for engineered fill. Off-site borrow material is not anticipated but cannot be ruled out without a review of the site grading plan.

Engineered fill material is defined as inorganic soils and/or engineered aggregate materials that are: (1) suitable for compaction; (2) free of organic matter, debris, and frozen material; and (3) meet the project grading/drainage performance needs. Unless otherwise approved by Solid Ground, soil engineered fill shall have **maximum particle size of 3 inches**, **LL ≤ 50**, and **PI ≤ 30**. Aggregate structural fill (stone) shall consist of durable crushed stone

meeting the project specifications and shall be placed and compacted in a manner that prevents bridging and excessive voids.

The following are recommendations for placement of soil engineered fill:

- Engineered fill should be placed in no greater than 8-inch-thick layers.
- Engineered fill should be compacted to at least 98 percent of the soil's maximum dry density as determined by the Standard Proctor Compaction test (ASTM D698).
- The moisture content of the fill material should be maintained within 2 percent (above or below) of its Standard Proctor optimum moisture content depending on the results of the Proctor tests.
- In-place density testing should be performed to check that the previously recommended compaction criteria have been achieved.
- Fill placement should be monitored on a full-time basis during site grading.

5.1.3 Protection of Earthwork

Common earthwork construction practices can leave soils exposed for long periods of time while work is performed in other areas of a site. Care should be taken during the earthwork phase to protect soils from degradation caused by sunlight, wind, precipitation, and other factors. Solid Ground recommends that any exposed soil be protected by straw, seeding, rock, or other methods if the area the soil is in will be left unattended for more than three days. Any soil left unattended or unprotected for more than three days should be re-evaluated prior to continuation of work.

5.2 Below Grade Walls

The following discussion is provided for **conceptual planning purposes only** for potential retaining walls associated with field grading. This section does **not** constitute structural design recommendations. Final wall geometry, foundation design, bearing capacity, and structural loading must be evaluated by the wall designer and may require additional geotechnical evaluation.

Based on our understanding of the project, permanent below grade walls may be utilized at the Junior High.

Equivalent Fluid Pressures (EFP)

We do not recommend undrained conditions. If undrained conditions are designed, we should be contacted to provide additional recommendations. The following table (Table 2) presents EFP for at-rest, passive and active conditions. For the drainage granular backfill, these values assume that a "full" wedge of the material is present behind the wall (Figure 17). The wedge is defined as 2 feet from the base of the wall to a 1:2 (H:V) slope upward.

Table 2 – Equivalent Fluid Pressures

Backfill Material	At Rest (PCF) Drained Condition	Active (PCF) Drained Condition	Passive (PCF) Drained Condition
Anticipated Well Graded Gravel sloping towards the wall (Φ = 38◦)	50	30	600
Anticipated in-situ soil sloping towards the wall (Φ = 23◦)	75	55	260

For designers who prefer lateral earth pressure coefficients, the following may be used for preliminary design under **drained** conditions (level backfill, no wall friction assumed), with the understanding that project-specific geometry and backfill slopes may require adjustment:

- For granular backfill with ϕ = 38°: **Ka = 0.24**, **K0 = 0.38**, **Kp = 4.20**
- For in-situ soil with ϕ = 23°: **Ka = 0.44**, **K0 = 0.61**, **Kp = 2.28**

These coefficients are provided for convenience; the EFP values in Table 2 may also be used directly.

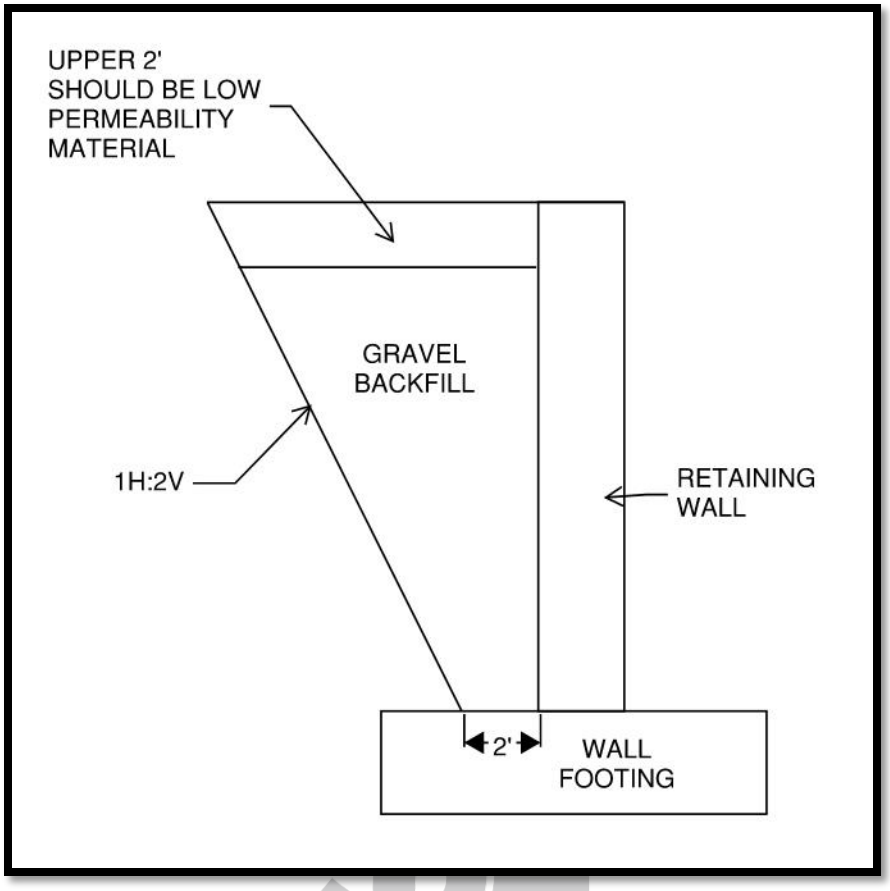


Figure 17: Retaining Wall "Wedge"

Surcharge loads from construction equipment, adjacent pavements, and nearby structures shall be included in wall design. For preliminary design, a uniform surcharge pressure may be assumed and converted to an equivalent lateral pressure using the applicable earth pressure condition (at-rest or active). Surcharge magnitude and load geometry are outside the scope of this study and should be selected by the structural designer based on project-specific loading. In addition, a factor of safety should also be included as part of the design. Both the factor of safety and surcharge loads are not accounted for in the scope of this study. A coefficient of friction between clayey soil and concrete of 0.30 can be utilized.

The following values are provided for **conceptual estimating purposes only** and shall not be used for final wall or foundation design without additional geotechnical evaluation specific to wall location, geometry, and loading.

We are assuming most of the permanent retaining walls are moderately loaded (up to 5 kips/ft). It is recommended that the below grade wall utilize shallow soil bearing foundations bearing on siff or better in-situ soil or engineered fill. **We recommend the use of a maximum net allowable bearing pressure of 2,000 PSF (pounds per square foot) for shallow foundation bearing on stiff or better in-situ soil or engineered fill.** Please contact us if retaining wall loads are expected to exceed our assumptions in this report.

Free Drainage Granular Material

A free drainage backfill material should preferably be "GW", as classified by the USCS, so that it will be free draining and exhibit an angle of shear resistance of 38 degrees or more. The material should have less than 3 percent passing the No. 200 sieve and less than 30 percent passing the No. 40 sieve. The No. 40 sieve material should be non-plastic.

Wall drainage systems should consist of a filtered granular backfill (No. 57 size crushed stone) by use of geotextile fabric. The drainage backfill should extend to within 2 feet of the ground surface. Compacted engineered fill should be placed over the drainage backfill to prevent direct surface water inflow. Compaction within five feet of walls should be accomplished by using hand compaction equipment.

Drainage Requirements

To achieve the “drained” condition, an outlet drain at the base of the wall in conjunction with a collector pipe that drains the water away from the structure should be constructed. The drains should be filtered and protected against potential erosion. **We highly recommend drainage behind the wall**. To provide drainage behind the wall, construct a vertical section of crushed stone or gravel approximately 18 inches wide behind the wall with perforated drainpipe located at the foundation level. The granular wall backfill material should be capped with 12 to 24 inches of low plasticity clay to minimize infiltration of surface water runoff behind below grade walls. As with any drainage system, the built-up water will need to be conveyed from behind the wall through a gravity drain or sump pump system.

It should be noted that groundwater dewatering methods will require a more extensive and robust wall to accommodate hydrostatic pressure in conjunction with a permanent drainage system. If drained conditions cannot

be achieved, we should be contacted immediately to provide additional recommendations.

5.3 Plan Review

To better ensure conformance of site earthwork, grading, drainage, and turf subgrade preparation with the recommendations contained in this report, Solid Ground should review the completed civil/site plans prior to construction. The plans should be made available for our review as soon as possible after completion so that we can better assist in keeping your project schedule on track.

We recommend that the following project-specific note be added to the architectural, structural, and civil plans: "The geotechnical aspects of this project, including earthwork, subgrade preparation, engineered fill placement and compaction, retaining wall backfill and drainage, and site drainage provisions affecting subgrade performance, shall be constructed in general accordance with the recommendations of the **Report of Geotechnical Exploration** prepared by Solid Ground Consulting Engineers, dated **February 28, 2026**."

5.4 Construction Monitoring and Observations

Based on experience; in order to obtain the Certificate of Occupancy for this development, you will be required to directly contract a qualified and certified inspection firm to provide special inspections.

It is advantageous to the owner to contract with Solid Ground to provide construction monitoring and observations for this project. Some of those benefits are as follows:

- As the geotechnical consultant for this project for this project, we will provide confirmation that subsurface conditions exposed during construction are substantially the same as those interpolated from our limited subsurface exploration, on which the analysis and design were based.
- The recommendations in this report are based on limited subsurface information. The nature and extent of variation across the site may not become evident until construction. If variations are then exposed, it will be necessary to re-evaluate our recommendations. If subsurface

conditions differ from those anticipated, we as the GEoR will provide recommendations if deemed necessary.

6.0 Report Limitations

This report has been prepared for the exclusive use of *Ross Tarrant Architects and Sarah Siekkinen* for specific application to the project site. Our recommendations have been prepared using generally accepted standards of geotechnical engineering practice in the Commonwealth of Kentucky. No other warranty is expressed or implied.

The recommendations provided are based on the subsurface information and other findings obtained by Solid Ground as well as information provided by you. If there are revisions to the plans for this project or if subsurface conditions detailed in this report are encountered during construction that are different than our exploration, we should be notified immediately to modify the foundation recommendations if deemed necessary. We cannot be held responsible for the impact of those conditions on the project if those impacts are not made known to us.

The recommendations contained in this report are intended solely for earthwork and synthetic turf field construction at the referenced site. Use of this report for structural design, foundation support, or other purposes not described herein is not authorized without additional geotechnical evaluation.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

7.0 Associated Geotechnical Risks

The analytical tools which are used by the geotechnical engineer in this area are generally empirical and must be used in conjunction with professional engineering judgment and experience. Therefore, the recommendations presented in this geotechnical exploration should not be considered risk-free and are not a guarantee that the proposed structure will perform as planned. The engineering recommendations presented in this are based on the information gathered during the subsurface exploration, information provided by you and experience with similar projects.

APPENDICES

APPENDIX A – BORING LOGS

APPENDIX B – LAB RESULTS

Soil Boring: B-1

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.959102, -84.217056
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 9'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 910.2'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		3-7-4	11	22.2
			Silty Lean Clay, stiff, moist, brown, trace gravel & sand & organics (CL) 2.5	2.5 ft				
			Well-graded Gravel, very stiff, trace clay and sand (GW) 5	5 ft		8-14-3	17	
5	905		**Clayey Gravel**, firm, moist, trace sand & organics (GC) 7.5	7.5 ft		8-4-5	9	
			Silty Lean Clay, very stiff, damp, brown, little gravel & sand, black mottling (CL) 9			5-9-9	18	25.2

Auger refusal at 9'

Graphics Legend

- Topsoil
- CL
- GW
- GC
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-2

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.959096, -84.216616
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 911.1'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		2-2-3	5	23.0
	910		**Silty Lean Clay**, soft to firm, moist, brown, little organics, trace sand & gravel (CL) 2.5	2.5 ft				
			Well-graded Gravel with Sand, very dense, grayish brown, (GW) 5	5 ft		50/0.4'	50	
5	905		**Sandy Lean Clay with Gravel**, very stiff, damp, brown, trace silt (CL)	7.5 ft		8-12-5	17	
			7.5': stiff, moist	10 ft		7-7-4	11	
10			10.0': hard, some gravel 10.8			4-50/0.3'	50	21.0

Auger refusal at 10.8'

Graphics Legend

- Topsoil
- GW
- CL
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-3

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.958931, -84.216829
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 6.3'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 911.7'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: % Fines	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		50/0.3'				
	910		**Lean to Fat Clay with Sand**, hard, moist, brown, little gravel, trace organics (CL-CH)	2.5 ft		2-3-5	8	79.2	49-22-27	27.1
			2.5': reddish brown							
5			5 **Sandy Lean to Fat Clay**, hard, moist, brown, some gravel, little silt (CL-CH) 6.3	5 ft		4-5-50/0.1'	50			

Auger refusal at 6.3'

Graphics Legend

- Topsoil
- CL-CH
- SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-4

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.958741, -84.217070
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 2'	

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Rig Type: Mobile B-25 Tooling: 3-1/4" Hollow Stem Auger Surface Elevation: 912.7'					
			Topsoil 0.5	0 ft		3-4-6	10	27.5
			Clayey Gravel, firm to stiff, moist, some sand, trace organics (GC) 2					

Auger refusal at 2'

Graphics Legend

Topsoil

GC

SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-5

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/20/2026	Date Completed: 02/20/2026	Coordinates: 37.958727, -84.216605
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 7.6'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 913.7'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.5	0 ft	SS	3-4-5	9	27.8
		Silty Lean Clay, moist, brown, little gravel, trace sand & organics (CL) 2.5	2.5 ft	SS	19-19-50/0.2'	69	
	910	**Well-graded Gravel**, very dense, some sand & silt, little clay (GW)	5 ft	SS	9-10-18	28	
5			7.5 ft	SS	50/0.2'	50	
		7.5': no clay 7.6					
		Auger refusal at 7.6'					

Graphics Legend

- Topsoil
- GW
- CL
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-6

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.978709, -84.191845
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 952.5'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: % Fines	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)
			Asphalt 0.3	0 ft		2-3-6	9			
			Clayey Gravel, firm, damp, brown, some sand (GC)							
	950		2.5	2.5 ft						
			Lean Clay, soft to firm, damp, brown, little sand, trace gravel, gray mottling (CL)			2-2-3	5			
				5 ft						
5			5.0': soft, moist, trace sand			WOH-2-2	4	90.4		30.7
	945			7.5 ft						
			7.5': stiff, trace sand			6-8-9	17		39-20-19	22.2
10				10 ft						
			10.0': hard 10.8			3-50/0.3'	50			

Auger refusal at 10.8'

Graphics Legend

- Asphalt
- GC
- CL
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-7

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.978406, -84.191572
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 8.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 942.0'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.7	0 ft	2-13-5	18	22.7
	940	**Silty Lean Clay**, firm, moist, brown, large limestone fragments, little sand, trace gravel, gray mottling (CL) 2.5	2.5 ft	2-14-2	16	
5	935	**Silty Lean to Fat Clay**, very stiff, wet, brown, trace sand & gravel, gray mottling (CL-CH)	5 ft	WOH-2-4	6	35.4
		7.5': hard 8.8	7.5 ft	50/0.4'	50	

Auger refusal at 8.8'

Graphics Legend

- ▽ -
- Topsoil
- CL
- CL-CH
- SS - Small Split Spoon

Water Levels

- ▽ Water encountered @ 2.5'
- ▼ -

Soil Boring: B-8

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.978626, -84.191145
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 5.4'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 944.5'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.6	0 ft		3-4-5	9	
			Silty Lean Clay, firm, damp, reddish brown, little sand, trace gravel, black mottling (CL) 2.5	2.5 ft				
	940		**Clayey Gravel**, very stiff, damp, light brown, trace silt, orange mottling (GC)			3-8-8	16	16.4
5			5.0': hard, moist 5.4	5 ft		50/0.4'	50	

Auger refusal at 5.4'

Graphics Legend

- Topsoil
- CL
- GC
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-9

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.978788, -84.191484
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 944.6'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.7	0 ft	SS	3-3-5	8	25.1
		Silty Lean Clay, firm, moist, brown, some sand, trace gravel & organics (CL) 2.5	2.5 ft				
	940	**Silty Lean to Fat Clay**, soft, moist, brown, little gravel, trace sand, gray mottling (CL-CH)		SS	1-1-2	3	
5		5.0': light brown, trace gravel	5 ft	SS	1-2-2	4	32.5
			7.5 ft	SS	WOH-2-2	4	
	935	10	10 ft				
10		**Silty Gravel**, very dense, damp, trace sand (GM) 10.8		SS	18-50/0.3'	50	

Auger refusal at 10.8'

Graphics Legend

- Topsoil
- CL
- CL-CH
- GM
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-10

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979020, -84.191566
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 13.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 951.5'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Lab: % Fines	Lab: Moisture Content (%)
		Asphalt 0.2	0 ft		5-2-3	5		
	950	**Well-graded Gravel with Sand**, loose, little clay (GW) 2.5	2.5 ft					
		Lean to Fat Clay, soft, damp, brown, trace sand, gray mottling (CL-CH)			2-1-2	3		29.1
5		5.0': moist	5 ft		WOH-2-1	3	96.3	34.5
	945		7.5 ft		2-1-2	3		
		7.5': moist, trace gravel						
10		10.0': moist, trace gravel, no mottling	10 ft		WOH-1-2	3		25.8
	940	13.8						

Auger refusal at 13.8'

Graphics Legend

- Asphalt
- GW
- CL-CH
- SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-11

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/17/2026	Date Completed: 02/17/2026	Coordinates: 37.979025, -84.191053
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 10.1'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 946.5'

Depth (ft)	Elevation (ft)	Visual Classification and Remarks	Depth of Sample (ft)	Sample Graphic	Blow Counts	Uncorrected N-Value	Moisture Content (%)
		Topsoil 0.7	0 ft	SS	WOH-3-3	6	24.6
	945	**Silty Lean Clay**, firm, damp, brown, little sand, trace gravel & organics (CL) 2.5	2.5 ft				
		Sandy Lean Clay, firm, damp, brown, and gravel, trace silt & organics (CL) 5	5 ft	SS	3-4-4	8	
5	940	**Silty Lean to Fat Clay**, very stiff, moist, brown, little sand, trace gravel, gray & black mottling (CL-CH) 7.5	7.5 ft	SS	2-4-18	22	25.3
		Clayey Gravel, very stiff, moist, large limestone fragments (GC) 10	10 ft	SS	5-11-12	23	
10		**Weathered Rock**, (shale) 10.1			50/0.1'	50	
		Auger refusal at 10.1'					

Graphics Legend

- Topsoil
- CL
- CL-CH
- GC
- Weathered Rock
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-12

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979286, -84.190575
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 5.1'	

Rig Type	Mobile B-25
Tooling	3-1/4" Hollow Stem Auger
Surface Elevation	944.4'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Atterberg Limits (LL-PL-PI)	Lab: Moisture Content (%)
			Topsoil 0.7	0 ft		3-5-6	11		
			Lean Clay with Gravel, stiff, damp, light brown, some sand (CL)						
			2.5': very stiff	2.5 ft		4-5-18	23	38-17-21	10.4
	940								
5			5.0': hard 5.1	5 ft		50/0.1'	50		
			Auger refusal at 5.1'						

Graphics Legend

- Topsoil
- CL
- SS - Small Split Spoon

Water Levels

- -
- -

Soil Boring: B-13

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979461, -84.190920
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 5.1'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 944.4'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Topsoil 0.5	0 ft		3-3-3	6	32.3
			Silty Lean to Fat Clay, firm, moist, reddish brown, trace gravel & organics (CL-CH) 2.5	2.5 ft		4-6-13	19	
	940		**Sandy Lean to Fat Clay**, very stiff, moist, light brown, and gravel, trace silt, gray mottling (CL-CH)					
5			5.1	5 ft		50/0.1'	50	

Auger refusal at 5.1'

Graphics Legend

- Topsoil
- CL-CH
- SS - Small Split Spoon

Water Levels

- ▽ -
- ▼ -

Soil Boring: B-14

SOLID GROUND
CONSULTING ENGINEERS

Project: Clark County Fields GEO
Location: Winchester, KY
Project Number: 26-145

Date Started: 02/18/2026	Date Completed: 02/18/2026	Coordinates: 37.979405, -84.191251
Location Accuracy: Estimated from Google Maps	Client Name: RossTarrant Architects	Hammer Type: Auto
Method: Auger	Depth: 7.8'	

Rig Type: Mobile B-25
Tooling: 3-1/4" Hollow Stem Auger
Surface Elevation: 951.5'

Depth (ft)	Elevation (ft)	Graphic Log	Visual Classification and Remarks	Samples: Depth of Sample (ft)	Samples: Sample Graphic	Samples: Blow Counts	Samples: Uncorrected N-Value	Lab: Moisture Content (%)
			Asphalt 0.2	0 ft		5-2-3	5	27.0
	950		**Lean Clay with Sand**, soft to firm, moist, and gravel, trace organics, gray mottling (CL)					
			2.5	2.5 ft				
			Sandy Lean Clay, firm, damp, reddish brown, little gravel, trace silt, gray & black mottling (CL)			3-4-5	9	
				5 ft				
5			5.0': trace gravel			2-3-4	7	30.0
	945			7.5 ft				
			7.5': hard, some gravel 7.8			50/0.3'	50	

Auger refusal at 7.8'

Graphics Legend

- Asphalt
- CL
- SS - Small Split Spoon

Water Levels

- -
- -

SOLID GROUND
CONSULTING ENGINEERS

Distribution:

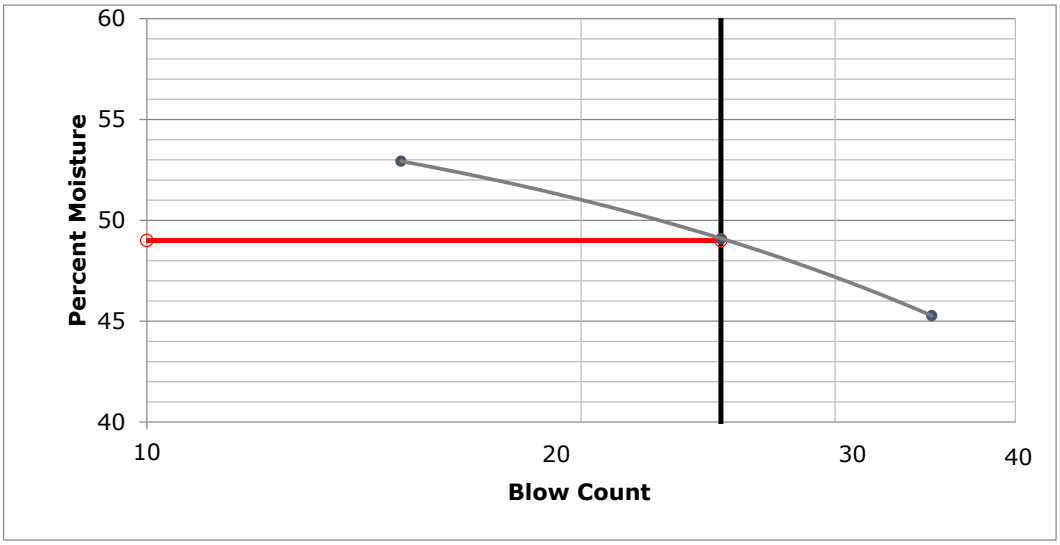
Report:

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B3	Depth	2.5'-4.0'
Soil Description	Reddish Brown LEAN to FAT CLAY with sand	Prep. Method	DRY
Date Sample Received	2/25/2026	Date Tested	2/27/2026

LIQUID LIMIT

Run Number	1	2	3	4	5	6
Tare Number	46	113	60			
Tare + Wet Soil	21.2	21.6	21.4			
Tare + Dry Soil	18.5	18.9	19.0			
Weight of Water	2.7	2.7	2.4			
Weight of Tare	13.4	13.4	13.7			
Weight of Dry Soil	5.1	5.5	5.3			
Water Content	52.9	49.1	45.3			
Number of Blows	15	25	35			

Liquid limit test was performed using manual device and metal grooving tool



LL	49
PL	22
PI	27
SYMBOL FROM PLASTICITY CHART	CL-CH
Minus #200	79.2
USCS	LEAN to FAT CLAY with sand (CL-CH)

PLASTIC LIMIT

Run Number	1	2	3	4	5	Natural Moisture
Tare Number	4	116				
Tare + Wet Soil	19.3	19.5				
Tare + Dry Soil	18.3	18.5				
Weight of Water	1.0	1.0				
Weight of Tare	13.8	13.8				
Weight of Dry Soil	4.5	4.7				
Water Content	22.2	21.3				
Plastic Limit	21.7					

Plastic limt test specimens were hand rolled

SOLID GROUND
— CONSULTING ENGINEERS —

Distribution:

Report of Percent Passing No. 200 Sieve
ASTM D1140

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B3	Depth	2.5'-4.0'
Soil Description	Reddish Brown LEAN to FAT CLAY with sand	Method A or B	B
Date Sample Received	2/25/2026	Date Tested	2/26/2026

Boring/Sample No.	B3					
Depth (From-To)	2.5'-4.0'					

#200 DATA						
Tare Number	LRP					
Wet Soil + Tare, g	719.5					
Dry Soil + Tare, g	384.9					
Wt. of Tare	319.5					
Wt. of Dry Soil, g	65.4					
Soak Time, hours	24					

% MOISTURE DATA						
Tare Number	56	119				
Wet Soil + Tare, g	69.8	68.5				
Dry Soil + Tare, g	57.5	57.1				
Wt of Water	12.3	11.4				
Wt of Tare	13.4	13.7				
Wt. of Dry Soil, g	44.1	43.4				
% Moisture	27.9	26.3				

CALCULATIONS						
Dry Wt. Before, g	314.76					
Dry Wt. After, g	65.40					
% Retained	20.8					
% Passing	79.2					

SOLID GROUND
CONSULTING ENGINEERS

Distribution:

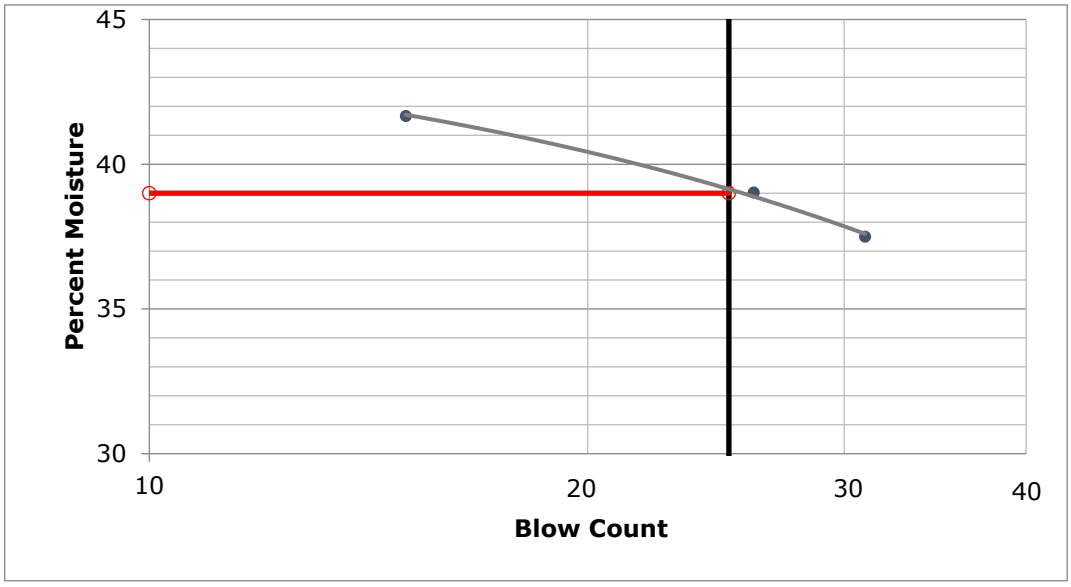
Report:

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B6	Depth	7.5'-9.0'
Soil Description	Brown LEAN CLAY	Prep. Method	DRY
Date Sample Received	2/25/2026	Date Tested	2/26/2026

LIQUID LIMIT

Run Number	1	2	3	4	5	6
Tare Number	147	13	130			
Tare + Wet Soil	20.2	19.1	20.4			
Tare + Dry Soil	18.4	17.5	18.4			
Weight of Water	1.8	1.6	2.0			
Weight of Tare	13.6	13.4	13.6			
Weight of Dry Soil	4.8	4.1	4.8			
Water Content	37.5	39.0	41.7			
Number of Blows	31	26	15			

Liquid limit test was performed using manual device and metal grooving tool



LL	39
PL	20
PI	19

SYMBOL FROM PLASTICITY CHART

CL

USCS

LEAN CLAY (CL)

PLASTIC LIMIT

Run Number	1	2	3	4	5	Natural Moisture
Tare Number	21	19				
Tare + Wet Soil	19.2	19.4				
Tare + Dry Soil	18.3	18.5				
Weight of Water	0.9	0.9				
Weight of Tare	13.8	13.8				
Weight of Dry Soil	4.5	4.7				
Water Content	20.0	19.1				
Plastic Limit	19.6					

Plastic limt test specimens were hand rolled

SOLID GROUND
— CONSULTING ENGINEERS —

Distribution:

Report of Percent Passing No. 200 Sieve
ASTM D1140

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B6	Depth	5.0'-6.5'
Soil Description	Brown LEAN CLAY	Method A or B	B
Date Sample Received	2/25/2026	Date Tested	2/26/2026

Boring/Sample No.	B6					
Depth (From-To)	5.0'-6.5'					

#200 DATA						
Tare Number	LRP					
Wet Soil + Tare, g	723.0					
Dry Soil + Tare, g	352.3					
Wt. of Tare	322.8					
Wt. of Dry Soil, g	29.5					
Soak Time, hours	24					

% MOISTURE DATA						
Tare Number	17	49				
Wet Soil + Tare, g	71.2	69.2				
Dry Soil + Tare, g	58.2	55.6				
Wt of Water	13.0	13.6				
Wt of Tare	13.5	13.4				
Wt. of Dry Soil, g	44.7	42.2				
% Moisture	29.1	32.2				

CALCULATIONS						
Dry Wt. Before, g	306.30					
Dry Wt. After, g	29.50					
% Retained	9.6					
% Passing	90.4					

SOLID GROUND
— CONSULTING ENGINEERS —

Distribution:

Report of Percent Passing No. 200 Sieve
ASTM D1140

Project Name: Clark Co Misc. | Project #: 26-145

Sample #: B10 | Depth: 5.0'-6.5'

Soil Description: Brown LEAN to FAT CLAY | Method A or B: B

Date Sample Received: 2/25/2026 | Date Tested: 2/27/2026

Boring/Sample No.	B10					
Depth (From-To)	5.0'-6.5'					

#200 DATA						
Tare Number	LRP					
Wet Soil + Tare, g	833.6					
Dry Soil + Tare, g	444.3					
Wt. of Tare	433.4					
Wt. of Dry Soil, g	10.9					
Soak Time, hours	24					

% MOISTURE DATA						
Tare Number	131	129				
Wet Soil + Tare, g	69.7	68.3				
Dry Soil + Tare, g	55.3	54.3				
Wt of Water	14.4	14.0				
Wt of Tare	13.5	13.8				
Wt. of Dry Soil, g	41.8	40.5				
% Moisture	34.4	34.6				

CALCULATIONS						
Dry Wt. Before, g	297.53					
Dry Wt. After, g	10.90					
% Retained	3.7					
% Passing	96.3					

SOLID GROUND
CONSULTING ENGINEERS

Distribution:

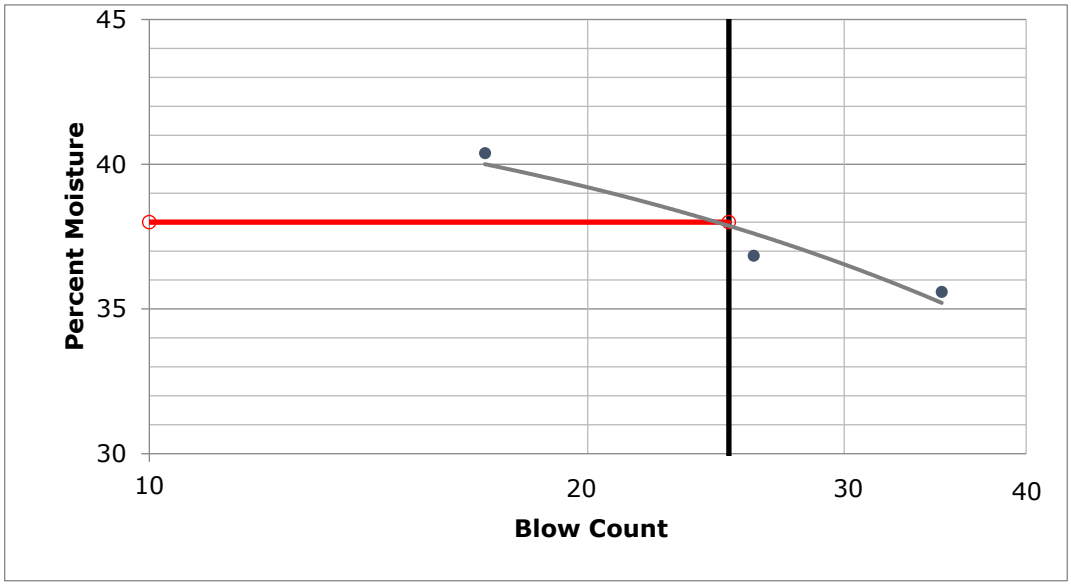
Report:

Project Name	Clark Co Misc.	Project #	26-145
Sample #	B12	Depth	2.5'-4.0'
Soil Description	Light Brown LEAN CLAY with gravel	Prep. Method	DRY
Date Sample Received	2/25/2026	Date Tested	2/26/2026

LIQUID LIMIT

Run Number	1	2	3	4	5	6
Tare Number	145	48	52			
Tare + Wet Soil	20.8	21.1	21.5			
Tare + Dry Soil	18.7	19.0	19.4			
Weight of Water	2.1	2.1	2.1			
Weight of Tare	13.5	13.3	13.5			
Weight of Dry Soil	5.2	5.7	5.9			
Water Content	40.4	36.8	35.6			
Number of Blows	17	26	35			

Liquid limit test was performed using manual device and metal grooving tool



LL 38

PL 17

PI 21

SYMBOL FROM PLASTICITY CHART

CL

USCS

LEAN CLAY with gravel (CL)

PLASTIC LIMIT

Run Number	1	2	3	4	5	Natural Moisture
Tare Number	112	56				
Tare + Wet Soil	19.8	19.5				
Tare + Dry Soil	18.9	18.6				
Weight of Water	0.9	0.9				
Weight of Tare	13.7	13.4				
Weight of Dry Soil	5.2	5.2				
Water Content	17.3	17.3				
Plastic Limit	17.3					

Plastic limt test specimens were hand rolled

Natural Moisture Content Determination (ASTM D2216)

Project Name: Clark Co Misc. Date: 2/26/2026

Project Number: 26-145 Page: 1 of 1

Boring Number	Sample Depth (ft)	Can ID Number	Can Weight	Wet Weight + Can	Dry Weight + Can	Moisture %
B1	0.0-1.5	254	13.7	71.1	60.5	22.6
		38	13.6	70.0	59.9	21.8
B1	7.5-9.0	57	13.7	71.7	60.3	24.5
		9	13.6	68.5	57.2	25.9
B2	0.0-1.5	40	13.7	69.7	59.5	22.3
		6	13.5	70.8	59.8	23.8
B2	10.0-10.8	10	13.4	69.3	60.6	18.4
		3	13.4	68.9	58.3	23.6
B3	2.5-4.0	56	13.4	69.8	57.5	27.9
		199	13.7	68.5	57.1	26.3
B4	0.0-1.5	14	13.9	68.1	56.1	28.4
		112	13.8	68.7	57.2	26.5
B5	0.0-1.5	31	13.5	70.1	57.0	30.1
		13	13.8	70.4	58.9	25.5
B6	5.0-6.5	17	13.5	71.2	58.2	29.1
		49	13.4	69.2	55.6	32.2
B6	7.5-9.0	8	13.6	69.5	59.4	22.1
		122	13.8	71.7	61.1	22.4
B7	0.0-1.5	35	13.4	68.9	58.9	22.0
		50	13.7	68.9	58.4	23.5
B7	5.0-6.5	145	13.4	70.7	55.9	34.8
		29	13.7	68.5	54.0	36.0
B8	2.5-4.0	48	13.3	69.1	61.2	16.5
		42	13.6	69.0	61.2	16.4
B9	0.0-1.5	60	13.7	69.5	58.1	25.7
		116	13.8	69.3	58.4	24.4
B9	5.0-6.5	100	13.9	70.6	57.6	29.7
		234	13.4	69.4	54.8	35.3
B10	2.5-4.0	5	13.4	69.2	56.5	29.5
		13	13.5	68.7	56.4	28.7
B10	10.0-11.5	128	13.9	69.9	58.5	25.6
		19	13.7	69.4	57.9	26.0
B11	0.0-1.5	46	13.5	70.3	59.0	24.8
		7	13.5	69.2	58.3	24.3
B11	5.0-6.5	52	13.5	68.5	57.1	26.1
		4	13.8	70.7	59.5	24.5
B12	2.5-4.0	18	13.7	69.6	64.9	9.2
		37	13.3	71.0	65.0	11.6
B13	0.0-1.5	139	13.5	69.0	55.3	32.8
		21	13.8	69.7	56.2	31.8
B14	0.0-1.5	129	13.9	69.7	57.3	28.6
		85	13.8	68.5	57.4	25.5
B14	5.0-6.5	131	13.6	69.3	56.7	29.2
		147	13.4	69.0	55.9	30.8
B10	5.0-6.5	131	13.5	69.7	55.3	34.4
		129	13.8	68.3	54.3	34.6

SECTION 015713 - TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A Prevention of erosion due to construction activities.
B Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
C Restoration of areas eroded due to insufficient preventive measures.
D Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A Section 311000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.
B Section 312200 - Grading: Temporary and permanent grade changes for erosion control.
C Section 321123 - Aggregate Base Course: Temporary and permanent roadways.
D Section 329219 - Seeding: Permanent turf for erosion control.

1.03 REFERENCE STANDARDS

A ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus; 2014.
B ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.; 1999a (Reapproved 2014).
C ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015 (Reapproved 2023).
D ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a.
E ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2012.
F ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).
G EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.
H FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; 1995.
I USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 2009.

1.04 PERFORMANCE REQUIREMENTS

A Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
B Also comply with all more stringent requirements of State of Kentucky Erosion and Sedimentation Control Manual.
C Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.
D Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
    1. Obtain and pay for permits and provide security required by authority having jurisdiction.
    2. Owner will withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.
E Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

F Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

G Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
1. Control movement of sediment and soil from temporary stockpiles of soil.
2. Prevent development of ruts due to equipment and vehicular traffic.
3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

H Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
1. Prevent windblown soil from leaving the project site.
2. Prevent tracking of mud onto public roads outside site.
3. Prevent mud and sediment from flowing onto sidewalks and pavements.
4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

I Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

J Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

K Open Water: Prevent standing water that could become stagnant.

L Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

A See Division 1 for submittal procedures.

B Erosion and Sedimentation Control Plan:
1. Submit within 2 weeks after Notice to Proceed.
2. Include:
   a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
   b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
   c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
   d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
   e. Other information required by law.
   f. Format required by law is acceptable, provided any additional information specified is also included.
3. Obtain the approval of the Plan by authorities having jurisdiction.
4. Obtain the approval of the Plan by Owner.

C Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

D Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

E Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures used during construction and temporary measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

A Mulch: Use one of the following:
1. Straw. Do not use hay.
2. Wood waste, chips, or bark.
3. Erosion control matting or netting.

B Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

C Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491.
3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533/D4533M.
7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
8. Manufacturers: subject to compliance with requirements, manufacturers offering the following products that may be incorporated into the work include:
   a. TenCate: www.tencate.com/#sle.
   b. North American Green: www.nagreen.com/#sle.
   c. Propex Geosynthetics: www.geotextile.com/#sle.

D Silt Fence Posts: One of the following, minimum 5 feet long:
1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot.
2. Hardwood, 2 by 2 inches in cross section.

E Gravel: See Section 321123 for aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

A Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B Construction Entrances: Traffic-bearing aggregate surface.
1. Width: As required; 20 feet, minimum.
2. Length: 50 feet, minimum.
3. Provide at each construction entrance from public right-of-way.
4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C Linear Sediment Barriers: Made of silt fences.
1. Provide linear sediment barriers:
   a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
   b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
   c. Along the toe of cut slopes and fill slopes.
   d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 200 feet apart.
   e. Across the entrances to culverts that receive runoff from disturbed areas.
2. Space sediment barriers with the following maximum slope length upslope from barrier:
   a. Slope of Less Than 2 Percent: 100 feet..
   b. Slope Between 2 and 5 Percent: 75 feet.
   c. Slope Between 5 and 10 Percent: 50 feet.
   d. Slope Between 10 and 20 Percent: 25 feet.
   e. Slope Over 20 Percent: 15 feet.

D Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

E Crushed Stone Silt Checks: Stone check dams located along drainage swales and above headwalls. Silt checks are to be installed as required to reduce the sediment load of the runoff to local, State and Federal requirements. Construction is to be in accordance with the contract documents and KTC requirements.

F Soil Stockpiles: Protect using one of the following measures:
1. Cover with polyethylene film, secured by placing soil on outer edges.
2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw; do not use hay.

G Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

H Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A Traffic-Bearing Aggregate Surface:
1. Excavate minimum of 6 inches.
2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.

B Silt Fences:
1. Store and handle fabric in accordance with ASTM D4873/D4873M.
2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.

3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
5. Install with top of fabric at nominal height and embedment as specified.
6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
7. Fasten fabric to wood posts using one of the following:
   a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gage, 0.083 inch shank diameter.
   b. Five staples per post with at least 17 gage, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.
8. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
9. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

C Mulching Over Large Areas:
1. Dry Straw: Apply 2-1/2 tons per acre; anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
2. Wood Waste: Apply 6 to 9 tons per acre.
3. Erosion Control Matting: Comply with manufacturer's instructions.

D Mulching Over Small and Medium Areas:
1. Dry Straw: Apply 4 to 6 inches depth.
2. Wood Waste: Apply 2 to 3inches depth.
3. Erosion Control Matting: Comply with manufacturer's instructions.

E Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

A Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B Repair deficiencies immediately.

C Silt Fences:
1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D Stone Silt Checks: Remove accumulated sediment when it reaches 1/3 of the height of the check.
E Clean out temporary sediment control structures weekly and relocate soil on site.
F Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

A Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
B Clean out temporary sediment control structures that are to remain as permanent measures.
C Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A Selective demolition of built site elements.
B Patching and repairs of existing elements to remain.

1.02 RELATED SECTIONS

A Section 015713 - Temporary Erosion and Sediment Control.
B Section 311000 - Site Clearing: Vegetation and existing debris removal.
C Section 312200 - Grading: Topsoil removal.

1.03 REFERENCES

A 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
B NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2004.

1.04 DEFINITIONS

A Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.
B Remove and salvage: Detach items from existing construction and deliver them to Owner.
C Remove and reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
D Existing to remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled. Protect construction indicated to remain against damage and soiling during selective demolition.

1.05 MATERIALS OWNERSHIP

A Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.06 SUBMITTALS

A Site Plan: Showing:
1. Areas for temporary construction and field offices.

B Selective Demolition Plan: Submit selective demolition plan as specified by OSHA and local authorities.
1. Indicate extent of selective demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
2. Indicate starting and ending dates for each activity.
3. Include a summary of safety procedures.
4. Coordination for shutoff, capping, and continuation of utility services.
5. Locations of temporary protection and means of egress.
6. Detailed sequence of selective demolition and removal work to ensure Owner's uninterrupted continuing occupancy of adjacent buildings and partial use of premises.

C Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed location, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
D Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before work begins.
E Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.07 QUALITY ASSURANCE

A Conference: Conduct conference at Project site to comply with requirements in Division 1 sections. Review methods and procedures related to building demolition including, but not limited to, the following:
1. Inspect and discuss condition of construction to be selectively demolished.
2. Review and finalize selective demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review and finalize protection requirements.

1.08 PROJECT CONDITIONS

A Conditions existing at time of inspection for bidding purposes will be maintained by Owner as far a practical.

B Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

C Storage or sale of removed items or materials on-site is not permitted.

1.09 HAZARDOUS MATERIALS

A Hazardous Materials: It is not expected that hazardous material will be encountered in the work.
1. If material suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A Fill Material: As specified in Section 312200 - Grading

B Repair Materials: Use repair materials identical to existing materials.
1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 EXECUTION

3.01 SCOPE

A area of site(s) to be selectively demolished will be vacated and their use discontinued before start of Work.

B Owner will occupy another area immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
1. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
2. Maintain access to existing walkways, exits, and other adjacent occupied or used facilities.
   a. Do not close or obstruct walkways, exits, or other occupied or used facilities without written permission from authorities having jurisdiction.

C Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 EXAMINATION

A Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

B Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditional are the same as those indicated in Project Record Documents.

C Inventory and record the condition of items to be removed and salvaged.

D When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to the Architect.

E Survey the condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

3.03 GENERAL PROCEDURES AND PROJECT CONDITIONS

A Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
1. Obtain required permits.
2. Use of explosives is not permitted.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
   a. Maintain adequate ventilation when using cutting torches.
4. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
5. Cut or drill from the exposed surface or finished side into concealed surfaces to avoid marring existing finished surfaces.
6. Provide, erect, and maintain temporary barriers and security devices.
   a. Comply with requirements in Division 1 Temporary Facilities and Controls.
7. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
8. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
9. Do not close or obstruct roadways or sidewalks without permit.
10. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

B Do not begin removal until receipt of notification to proceed from Owner.

C Site Restoration:
1. Staging, Parking and Storage: Restore lawn areas used for staging and storage of construction materials or parking during the project back to their original condition.

3.04 EXISTING UTILITIES

A Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B Protect existing utilities to remain from damage.

C Do not disrupt public utilities without permit from authority having jurisdiction.

D Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H Prepare selective demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.05 DEBRIS AND WASTE REMOVAL

A Except for items or materials indicated to be reused, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B Transport demolished materials from Owner's property and legally dispose of them..

C Transport demolished materials approved for fill and dispose of at designated spoils areas on Owner's property.

D Do not burn demolished materials on site.

E Leave site in clean condition, ready for subsequent work.

F Clean up spillage and wind-blown debris from public and private lands.

G Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return to condition existing before start of selective demolition.

END OF SECTION77777

SECTION 116833.23 - ATHLETIC EQUIPMENT -FIELD

PART 1 GENERAL

1.01 WORK INCLUDED

A Provide all equipment and materials, and do all work necessary to furnish and install the athletic equipment, as indicated on the drawings and as specified herein. Athletic equipment shall include, but not be limited to:
1. Soccer Goal

1.02 RELATED WORK

A Examine contract documents for requirements that affect work of this section. Other specification sections that directly relate to the work of this section include, but are not limited to:
1. Section 079005 - Joint Sealers
2. Section 312200 - Grading
3. Section 312316 - Excavation
4. Section 312323 - Fill
5. Section 321313 - Concrete Paving
6. Section 321613 - Concrete Curbs and Gutters
7. Section 321823.29 – Artifical Turf

1.03 REFERENCES

A Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. National Federation of State High School Associations (NFHS)
2. International Amateur Athletic Association (IAAF)
3. American Sports Builders Association (ASBA)
4. Manufacturers Data and Recommended Installation

1.04 SUBMITTALS

A Manufacturers Product Data
1. Provide manufacturers product data prior to actual field installation work, for Architects or Owners representatives review.

B Shop Drawings
1. Provide drawings of the manufacturers recommended installation and foundation requirements prior to actual field installation work, for Architect's or Owner's representatives review.
2. Provide color options/ samples where applicable for Architect's or Owner's representatives review.

1.05 QUALITY ASSURANCE

A Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

1.06 PRODUCT DELIVERY AND STORAGE

A Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owners representative. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Sound materials shall be stored above ground under protective cover or indoors so as to provide proper protection.

PART 2 PRODUCTS

2.01 SOCCER GOAL

A BASE:
1. Basis of Design: 8' x 24' SG824R Soccer Goal with SG2S Soccer Goal Safety System as manufactured by:

a. Sportsfield Specialties Inc., P.O. Box 231, 41155 State Highway 10, Delhi, NY 13753, p. 888-975-3343, f. 607-746-8481, www.sportsfieldspecialties.com

2. Basis of Design: 8' x 24' SG824R Round Post Soccer Goal(s):
   a. Top Crossbar Fabricated of 6061-T6 Extruded Aluminum Tube Having the Following Attributes:
      1) Length: 24’ - Regulation Size
      2) 4.375” Square x 4.688” Round Faced Crossbar, 3/16” (.1875”) Wall Thickness
      3) Powder Coated White Finish with Enhanced Resistance to UV and Fade
      4) 3/16” (0.1875”) Thick Formed Aluminum Channel Crossbar Attachment Brackets with Welded Tap Blocks, Mill Finish
   b. One Piece End Frame Construction Fabricated of 6061-T6 Extruded Aluminum Tube Having the Following Attributes:
      1) 4.375” Square x 4.688” Round Faced Corner Post, 8’H, 3/16” (.1875”) Wall Thickness
      2) Rolled Side Frame, 2" x 3" x 0.125" Thick Wall, Welded to Corner Upright Posts
      3) Radius Backside Corners
      4) Powder Coated White Finish with Enhanced Resistance to UV and Fade
   c. Rear Bottom Ground Bar Fabricated of 6061-T6 Extruded Aluminum Tube Having the Following Attreibutes:
      1) 2” x 2” x 0.25” Thick Wall with Welded ½” Aluminum End Plates
      2) Powder Coated White Finish with Enhanced Resistance to UV and Fade
   d. Accessories:
      1) Welded Aluminum Net Clips with Lifetime Guarantee
      2) 5mm Braided, Knotless White High Tenacity Polypropylene Soccer Net with Rope Bound Perimeter and 4” Square Mesh – 8.2’H x 24.4’L x 4.3’B x 8.6’D
      3) Model Specific Hardware Kit and Installation Instructions
      4) Ground Stake Storage Compartments
      5) All SG824R 8’ x 24’ Regulation Size Round Faced Soccer Goals Meet and Exceed Current ASTM F2950-14 Standard Safety and Performance Specification for Soccer Goals and F1938-98 Standard Guide for Safer Use of Movable Soccer Goals
      6) Five (5) Year Limited Manufacturer’s Product Warranty
3. SG2S® - Patented Soccer Goal Safety System:
   a. Rear Bottom Ground Bar Retractable Safety Clamp Fabricated of 3/16” (0.187”) Aluminum
   b. Powder Coated White Finish with Enhanced Resistance to UV and Fade
   c. Stainless Steel Assembly Hardware
   d. Access Frame and Cover Fabricated of 1/8” (0.125”) Aluminum with Gasket Seal and 1” PVC Drain Stub
   e. 13 Gauge Stainless Steel Pivot Bar
   f. Galvanized Steel Anchoring Hardware
4. SGMobile® SGMKR- Internal Soccer Goal Portable Mobility Wheel Kit and Handle:
   a. Welded 13 Gauge Stainless Steel Frame
   b. Ultra High Molecular Weight Polyethylene (UHMWPE) Plastic Wheel
   c. Stainless Steel Hardware
   d. Roll Formed Stainless Steel Rod with Stainless Steel Spring and Cushioned Rubber Handle

PART 3 EXECUTION

3.01 INSTALLATION OF EQUIPMENT

A All athletic equipment shall be installed as recommended with manufacturer's written directions, and as indicated on the drawings.

B Contractor shall connect all drain stubs provided in the equipment to the subdrainage system for the field.

END OF SECTION

SECTION 311000 - SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

A Clearing and protection of vegetation.
B Removal of existing debris.
C Removal of existing site improvements including pavements, utilities and utility structures, foundations or other site improvements.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 015713 - Temporary Erosion and Sediment Control.
C Section 312200 - Grading: Topsoil removal.
D Section 312323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.
E Section 312513 - Permanent Erosion Controls

PART 2 PRODUCTS

2.01 MATERIALS

A Fill Material: As specified in Section 312323 - Fill and Backfill

PART 3 EXECUTION

3.01 SITE CLEARING

A Comply with other requirements specified in Section 017000.
B Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

A Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
B Protect existing utilities to remain from damage.
C Do not disrupt public utilities without permit from authority having jurisdiction.
D Protect existing structures and other elements that are not to be removed.
E Protect existing vegetation to remain from damage and monitor according to ANSI A300 Part 5.
F Pavements and slabs are to be saw cut to provide a clean edge. Concrete pavements are to be cut at the nearest control joint to the required demolition area.

3.03 VEGETATION

A Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, planting beds, borrow areas (when applicable) and disposal areas (when applicable).
B Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
    1. At vegetation removal limits.
    2. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
    3. Around other vegetation to remain within vegetation removal limits.
C Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
    1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
    2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.

3. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.

D Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.04 DEBRIS

A Remove debris, junk, and trash from site.

B Leave site in clean condition, ready for subsequent work.

C Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 312200 - GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A Removal of topsoil.
B Rough grading the site for site structures.
C Finish grading.
D Post-construction site survey requirements.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 015713 - Temporary Erosion and Sediment Control.
C Section 311000 - Site Clearing.
D Section 312200.13 - Laser Grading: Laser Grading for Athletic fields.
E Section 312316 - Excavation.
F Section 312316.13 - Trenching: Trenching and backfilling for utilities.
G Section 312323 - Fill: Filling and compaction.
H Section 312513 - Permanent Erosion Controls
I Section 313413 - Flexible Concrete Erosion Control Mat
J Section 329219 - Seeding: Finish ground cover.

1.03 SUBMITTALS

A Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.
B As Built Conformance Survey. Refer to Part 3.08 below for requirements.

1.04 DEFINITIONS

A Finish Grade Elevations: Indicated on Drawings.
B Zone of Influence: Area beneath a footing or foundation that extends out from the bottom edge of the footing/foundation at a 45-degree angle down to a depth equal to 3 times the footing width.
C Fat Clays: Soil types with the classification of CH and a Plasticity Index (PI) above 30%.

1.05 QUALITY ASSURANCE

A Perform Work in accordance with State of Kentucky, Highway Department standards.
B Athletic Field Contractor shall meet the following criteria:
    1. Operations:
        a. Provide proof that they have been in business under the same name for a minimum of ten (10) years.
        b. Provide a qualified installation foreman to coordinate and review the component parts of the field system. Submit a resume of experience for Architects approval prior to starting work.
        c. Provide an American Sports Builders Association Certified Field Builder (CFB) to directly supervise all grading, drainage and installation of infill and athletic equipment within the athletic competition field areas.
    2. Experience:
        a. Must specialize in athletic field projects and the associated drainage and fine grading to tight tolerances, and this type of work being their primary income.
        b. Have installed a minimum of ten (10) similar fields with two (2) fields within the past three (3) years.

1.06 PROJECT CONDITIONS

A It is recommended that earthwork be done during the warm and dry months. If earthwork is to be done during cold or wet months, the use of DGA in lieu of general soil fill should be considered for structural

and pavement areas. Time extensions will not be considered for any delays due to the Contractor choosing to not use DGA in lieu of general soil fill during cold or wet months.

B Previous fill materials have been placed on site in new work area. Fill materials consisted of soil and shot rock materials. As such, contractors shall anticipate encountering these materials during earthwork operations. It is highly recommended that the Contractor excavate test pits prior to preparation of their bids in order to further clarify the extent of the materials.

C The soils found on this site are very sensitive to changes in the moisture content and will quickly degrade in such conditions and when subjected to construction traffic. The Contractor should carefully evaluate equipment to be used on the site so as to minimize degradation of the soils. In addition, the Contractor is to include in their bid the stabilization or repair of soils that will be affected by construction activities.

D The new synthetic turf, pavement, and stone base areas are not designed for construction traffic and should not be used for construction activities unless they are stabilized using #2 crushed stone and geogrid. Stabilization should include any undercutting and material handling, borrow or disposal necessary to maintain the design subgrade elevations after stabilization has been done. Any areas of subgrade, road base or pavement damage are to be repaired.

PART 2 PRODUCTS

2.01 MATERIALS

A Topsoil: Excavated from site and free of weeds. Supplement as needed with imported fertile agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0. Topsoil to be amended as needed.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify that survey bench mark and intended elevations for the Work are as indicated.

B Verify the absence of standing or ponding water. Refer to Specification Section 312319 for Dewatering requirements.

3.02 PREPARATION

A All site grading is unclassified.

B Identify required lines, levels, contours, and datum.

C Stake and flag locations of known utilities.

D Locate, identify, and protect from damage above- and below-grade utilities to remain.

E Provide temporary means and methods to remove all standing or ponding water from areas prior to grading. Refer to Specification Section 312319 for additional Dewatering requirements.

F Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

G Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

H Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

A Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

B Do not remove topsoil when wet.

C Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

D Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.

E See Section 312323 for filling procedures.

F Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.

G Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

H The general earthwork contractor, if used instead of the athletic field contractor, is to meet the rough grade elevation requirements in these specifications for the synthetic turf field areas. The athletic field contractor is to then verify that the grades are met prior to starting their work.

I The finished subgrade of the synthetic turf areas is to be surveyed by a Licensed Land Surveyor to ensure that it is within a tolerance of 0.5-inches total (+/- 1/4") within a 25-foot grid. The surveyor is to provide a PDF and AutoCad drawing of the actual survey locations and elevations prior to installation of Aggregate Base Courses.

J Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL AND STOCKPILING

A Stockpile excavated topsoil on site. No topsoil is to be removed from the site. Topsoil stockpile is to be covered or seeded and mulched to protect the pile from erosion.

B Stockpile subsoil that is to be re-used on site; remove remainder from site. Cover stockpile to prevent erosion and saturation of the material.

C Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

A Before Finish Grading:
1. Verify trench backfilling have been inspected.
2. Verify subgrade has been contoured and compacted.

B Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products and legally dispose of it off-site.

C Where topsoil is to be placed, scarify surface to depth of 3 inches.

D In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

E Place topsoil to the following compacted thicknesses:
1. Areas to be Seeded with Grass: 6 inches.

F Place topsoil during dry weather.

G Remove roots, weeds, rocks, and foreign material while spreading.

H Near synthetic turf areas, pavements, or other improvements spread topsoil manually to prevent damage.

I Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

J All finish grading within the Synthetic Turf Areas is to be done by a contractor that specializes in athletic field construction, and the areas are to be laser graded to elevations identified on the plans using high floatation, turf tire equipment. Refer to Specificaiton Section 312200.13.

K Lightly compact placed topsoil.

L Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

A Top Surface of Subgrade:
1. At Synthetic Turf Areas: A tolerance of 0.5-inches from required elevation.
2. All Other Areas: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
3. The finished subgrade of the synthetic turf area (including the perimeter curb) is to be surveyed by a Licensed Land Surveyor to ensure that it is within a tolerance of 0.5-inches total (+/- 1/4") within a 25-foot grid. The surveyor is to provide a PDF and AutoCad drawing of the actual survey locations and elevations prior to continuing with any aggregate base course work.

B Top Surface of Finish Grade:

1. At paved areas: A tolerance of plus or minus 0.125-inches (1/8-inch) from the required elevation based on a 25-foot grid with a maximum deviation of no more than 0.25-inch (1/4-inch)
2. Grass and vegetated areas: Plus or minus 0.04 foot (1/2 inch).

3.07 REPAIR AND RESTORATION

A Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

A See Section 312323 for compaction density testing.

B At substantial completion of this project, the Contractor is to provide a topographic survey of the construction area in order to verify that the grading and new development meets the contract requirements. The survey is to be done by a third-party surveyor approved by the Owner and is to be to the same quality as the survey included in the construction documents. The survey is to be provided in hard copy and as a digital file in Autocad 2022 or newer format. Items to be included are:

1. The street address for the property.
2. Two permanent, cast aluminum construction benchmarks set in concrete are to be located in locations as approved by the Architect.
3. Existing and new structures and buildings including elevations at all interior and exterior corners and finish floor elevations at each entrance into the existing structures inside the original survey boundary.
4. Location of roads, pavements and sidewalks with spot elevations at a maximum of every 20 feet along all pavements including: the top and bottom of curbs and retaining walls, along both edges of sidewalks, roads, and along the centerline of road. The width of roads, lanes and location of roadway centerlines are to be identified, as are the pavement materials.
5. All paint striping of roads and parking lots including individual and ADA parking spaces.
6. Utilities on the property and on adjacent streets up to their connections with the main lines. All new Utility piping and conduits are to be surveyed **prior to backfilling** of the utility trench. Utilities may be surveyed by the installing contractor provided they are surveyed by a Licensed Professional Land Surveyor and the completed utility survey is provided to the third-party conformance surveyor for a final survey. Utilities to be surveyed include but are not limited to the following:
   a. All water lines, fire hydrants, water meters, valves, etc. with pipe sizes and pipe material identified.
   b. All sanitary sewers, manholes, pump stations, vents, etc. with rim elevations, inverts, pipe sizes and types of piping.
   c. Gas piping, valves, meters, etc. with pipe sizes, materials and gas pressures where available.
   d. Storm sewers, manholes, surface inlets, headwalls, etc. with rim elevations, inverts, pipe sizes and types of piping.
   e. Underground and overhead electric lines with transformers, pole lights, guy wires, meters, etc. and identification of 2-phase or 3-phase.
   f. All communication lines (underground and overhead) for telephone, television, satellite, etc. with poles, manholes, satellite dishes, pull boxes, etc.
   g. All other utilities that may be present (steam piping, geothermal well fields and piping, gas transmission piping, septic tanks, grease traps, known underground storage tanks, etc.)
   h. Survey information is to include pipe sizes and materials for all piped utilities.
7. Name of the operating authority for each utility on or adjacent to the site.
8. All easements and right-of-ways on or adjacent to the site.

9. Site contours at one-foot intervals with spot elevations located between contours as needed for an accurate representation of grades.
10. Landscape features including all new individual trees and existing trees of 4” diameter and over as shown on the original survey.
11. All survey information is to be referenced to the NAD83 datum using Latitude/Longitude projections in decimal degrees and true elevations in feet above sea level.

3.09 CLEANING

A Sediment Control/Silt Fencing: Provide fabric silt fencing and other erosion control devices as required and shown on plans to control erosion and allow lawn crew to establish grass uniformly across slope areas.

B Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.

C Leave site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 312200.13 - LASER GRADING

PART 1 GENERAL

1.01 1.01 SECTION INCLUDES

A Laser Grading for Athletic Fields.

1.02 RELATED REQUIREMENTS

A Section 015713 - Temporary Erosion and Sediment Control.
B Section 312200 - Grading: Rough Grading
C Section 312316 - Excavation.
D Section 312316.13 - Trenching: Trenching and backfilling for utilities.
E Section 312316.26 - Rock Removal.
F Section 312323 - Fill: Filling and compaction.
G Section 321823.29 - Artificial Turf: Synthetic Turf System
H Section 334100 - Subdrainage: Field Subdrainage

1.03 SUBMITTALS

A Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.04 DEFINITIONS

A Finish Grade Elevations: Indicated on Drawings
B Zone of Influence: Area beneath a footing or foundation that extends out from the bottom edge of the footing/foundation at a 45-degree angle down to a depth equal to 3 times the footing width.
C Fat Clays: Soil types with the classification of CH and a Plasticity Index (PI) above 30% and Liquid Limit above 50%.
D Athletic Field Contractor: Contractor specializing in the construction of athletic fields.

1.05 QUALITY ASSURANCE

A Perform Work in accordance with State of Kentucky, Highway Department standards.
B Athletic Field Contractor shall meet the following criteria:
    1. Operations:
        a. Provide proof that they have been in business under the same name for a minimum of ten (10) years.
        b. Provide a qualified installation foreman to coordinate and review the component parts of the field system. Submit a resume of experience for Architects approval prior to starting work.
        c. Provide an American Sports Builders Association Certified Field Builder (CFB) to directly supervise all grading, drainage and installation of infield treatments and athletic equipment within the athletic competition field areas.
    2. Experience:
        a. Must specialize in athletic field projects and the associated drainage and fine grading to tight tolerances, and this type of work being their primary income.
        b. Have installed a minimum of ten (10) similar fields with two (2) fields within the past three (3) years.

1.06 PROJECT CONDITIONS

A It is recommended that earthwork be done during the warm and dry months. If earthwork is to be done during cold or wet months, the use of DGA in lieu of general soil fill should be considered for synthetic turf areas. Time extensions will not be considered for any delays due to the Contractor choosing to not use DGA in lieu of general soil fill during cold or wet months.
B Previous fill materials have been placed on site in new work area. Fill materials consisted of soil and shot rock materials. As such, contractors shall anticipate encountering these materials during earthwork

operations. It is highly recommended that the Contractor excavate test pits prior to preparation of their bids in order to further clarify the extent of the materials.

C The soils found on this site are very sensitive to changes in the moisture content and will quickly degrade in such conditions and when subjected to construction traffic. The Contractor should carefully evaluate equipment to be used on the site so as to minimize degradation of the soils. In addition, the Contractor is to include in their bid the stabilization or repair of soils that will be affected by construction activities.

PART 2 PRODUCTS

2.01 MATERIALS

A A. Fill Materials: See Section 312323.

PART 3 EXECUTION

3.01 EXAMINATION

A The Laser Grading Contractor is to review and and accept all subgrades by installed by the Grading Contractor in writing prior to starting their work.

B Verify that survey bench mark and intended elevations for the Work are as indicated.

C Verify the absence of standing or ponding water.

3.02 PREPARATION

A All site grading is unclassified.

B Identify required lines, levels, contours, and datum.

C Stake and flag locations of known utilities.

D Locate, identify, and protect from damage above- and below-grade utilities to remain.

E Provide temporary means and methods to remove all standing or ponding water from areas prior to grading. Refer to Specification Section 312319 for additional Dewatering requirements.

F Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

G Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

H Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

A Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

B Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

C The general earthwork contractor is to meet the rough grade elevation requirements in Specification Section 312200. The athletic field contractor is to then verify that the grades are met prior to starting their work.

D The Athletic Field Contractor is to laser grade the Synthetic Turf Field subgrade areas up to the perimeter curbs so that they meet the finished grade tolerance of 1/4 inch(+/- 1/8") prior to installing the subdrainage piping or any aggregate base courses.

E Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

F The finished subgrade is to be surveyed by a Licensed Land Surveyor to ensure that it is within a tolerance of 0.5-inches total (+/- 1/4") within a 25-foot grid. The surveyor is to provide a PDF and AutoCad drawing of the actual survey locations and elevations prior to continuing with any field work.

3.04 SOIL REMOVAL AND STOCKPILING

A Stockpile subsoil that is to be re-used on site; remove remainder from site. Cover stockpile to prevent erosion and saturation of the material.

B Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

A Before Finish Grading:
1. Verify trench backfilling has been inspected and approved.
2. Verify subgrade has been contoured and compacted.

B Remove debris, roots, branches, stones, in excess of 1/4 inch in size. Remove soil contaminated with petroleum products and legally dispose of it off-site.

C All finish laser grading within the Synthetic Turf, Competition Track, and Competition Tennis Areas is to be done by a contractor that specializes in athletic field construction, and the areas are to be laser graded to elevations identified on the plans using high floatation, turf tire equipment. The use of heavy tread wheeled equipment is prohibited.

3.06 TOLERANCES

A Top Surface of Laser Graded Subgrade
1. At Synthetic Turf Areas (for soil subgrade and drainage stone): A tolerance of 0.25-inches total (+/- 1/8-inch from required grade) within a 25-foot grid.
2. The finished subgrade is to be surveyed by a Licensed Land Surveyor to ensure that it is within a tolerance of 0.25-inches total (+/- 1/8") within a 25-foot grid. The surveyor is to provide a PDF and AutoCad drawing of the actual survey locations and elevations prior to continuing with any field work.

B Top Surface of Finish Laser Grade
1. At Synthetic Turf Areas (for turf cap stone aggregate base course): A tolerance of 0.25-inches total (+/-1/8-inch) from the required elevation based on a 25-foot grid with a maximum deviation of no more than 0.25-inch (1/4-inch) from required finish grade elevation.
2. The finished grade is to be surveyed by a Licensed Land Surveyor to ensure that it is within a tolerance of 0.25-inches total (+/- 1/8") within a 25-foot grid. The surveyor is to provide a PDF and AutoCad drawing of the actual survey locations and elevations prior to continuing with any field work.

3.07 REPAIR AND RESTORATION

A Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

A A. See Section 312323 for compaction density testing.

3.09 CLEANING

A Sediment Control/Silt Fencing: Provide fabric silt fencing and other erosion control devices as required and shown on plans to control erosion and allow lawn crew to establish grass uniformly across slope areas.

B Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.

C Leave site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 312316 - EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A Excavating for synthetic turf fields, paving and site structures.
B Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 015713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.
C Section 017000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.
D Section 312200 - Grading: Soil removal from surface of site.
E Section 312200 - Grading: Grading.
F Section 312316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
G Section 312316.26 - Rock Removal.
H Section 312319 - Dewatering
I Section 312323 - Fill: Fill materials, backfilling, and compacting.
J 312323.13 - Flowable Fill

1.03 DEFINITIONS

A Finish Grade Elevations: Indicated on Drawings
B Zone of Influence: Area beneath a footing or foundation that extends out from the bottom edge of the footing/foundation at a 45-degree angle down to a depth equal to 3 times the footing width.
C Fat Clays: Soil types with the classification of CH and a Plasticity Index (PI) above 30%.
D Shot Rock: Mixture of soil and rock material less than 1 cubic yard is size, with more than 15-percent soil.

1.04 REFERENCE STANDARDS

A 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

1.05 SUBMITTALS

A See Division 01 for submittal procedures.
B Temporary Support and Excavation Protection Plan.
C Shoring Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A Temporary Support and Excavation Protection Plan:
1. Bracing and shoring design to meet requirements of OSHA’s Excavation Standard, 29 CFR 1926, Subpart P.
B Designer Qualifications: For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.07 PROJECT CONDITIONS

A All excavation is unclassified including rock and bedrock excavation.
B Verify that survey bench mark and intended elevations for the Work are as indicated.
C Previous fill materials have been placed on site in new work area. Fill materials consisted of soil and shotrock materials. As such, contractors shall anticipate encountering these materials during earthwork operations. It is highly recommended that the Contractor excavate test pits prior to preparation of their bids in order to further clarify the extent of the materials.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A Verify that survey bench mark and intended elevations for the work are as indicated.

B Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by Architect. If the proposed excavation extends more than 1 foot into the prevailing groundwater, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by Geotechnical Engineer. Refer to Specification Section 312319 for additional Dewatering requirements.

3.02 PREPARATION

A Identify required lines, levels, contours, and datum locations.

B See Section 312200 for topsoil removal.

C Locate, identify, and protect utilities that remain and protect from damage.

D Notify utility company to remove and relocate utilities.

E Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

F Ensure that dewatering measures have been implemented and are functioning prior to excavation activities. Refer to Specification Section 312319 for additional Dewatering requirements.

G Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

A Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

1. Excavations in stable rock or in less than 5 feet in depth in ground judged as having no cave-in potential do not require excavation support and protection systems.
2. Depending upon excavation depth, time that excavation is open, soil classification, configuration and slope of excavation sidewalls, design and provide an excavation support and protection system that meets the requirements of 29 CFR 1926, Subpart P:
    a. Sloping and benching systems.
    b. Support systems, shield systems, and other protective systems.

3.04 EXCAVATING

A Underpin adjacent structures that could be damaged by excavating work. Due to the nature of the on-site soils, excavations will be prone to degradation and collapse and provisions for shoring and stabilization should be included in the bid.

B Excavate to accommodate new structures and construction operations.

1. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.

C Ensure that all areas being re-graded have a minimum of 24-inches of soil cover over bedrock. If bedrock is encountered within 24-inches of the finished grade elevations the excavation is to be extended to bedrock and the bedrock removed per Section 312316.26 - Rock Removal, and 24-inches of soil installed between bedrock and the finished grade elevations.

D Ensure that all areas being re-graded have a minimum of 24-inches of soil cover over shotrock materials. If shotrock is encountered within 24-inches of the finished grade elevations the excavation is to be extended to remove the shotrock material and 24-inches of soil installed between shotrock materials and the finished grade elevations. The excavation is to be proofrolled and brought back up to subgrade elevation in an engineered manner in accordance with Specification Section 312323.

E Ensure that all areas to receive synthetic turf have a minimum of 12-inches of soil or DGA cover from the synthetic turf subgrade elevation to the top of bedrock. If bedrock is encountered within 12-inches of synthetic turf subgrade elevation, the excavation is to be extended to bedrock and the bedrock removed per Section 312316.26 - Rock Removal, and a 12-inch soil or DGA cushion installed between bedrock and the subgrade elevation for the synthetic turf. Verification of the proper cushion is to be verified by the special inspections testing agency using rod soundings every 100-square feet of synthetic turf area.

F Ensure that all areas to receive synthetic turf have a minimum of 12-inches of soil or DGA cover from the synthetic turf subgrade elevation to the top of existing shotrock material. If shotrock is encountered within 12-inches of the subgrade elevation for the synthetic turf, the excavation is to be extended to remove the shotrock material and provide a 12-inch soil or DGA cushion between the top of shotrock material and the subgrade elevation for the synthetic turf. Verification of the proper cushion is to be verified by the special inspections testing agency using rod soundings every 100-square feet of synthetic turf area. The excavation is to be proofrolled and brought back up to subgrade elevation in an engineered manner in accordance with Specification Section 312323.

G Fill areas that do not pass proof-roll are to be undercut and/or stabilized as necessary to provide a stable platform for fill placement.

H Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

I Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

J Do not interfere with 45 degree bearing splay (zone of influence) of foundations without approval from the Architect and approved specific backfill requirements.

K Cut utility trenches wide enough to allow inspection of installed utilities.

L Hand trim excavations. Remove loose matter.

M Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 312323.

N Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control. Refer to Specification Section 312319 for additional Dewatering requirements.

O Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect. If the proposed excavation extends more than 1 foot into the excavation, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by the Geotechnical Engineer. Refer to Specification Section 312319 for additional Dewatering requirements.

P Remove excavated material that is unsuitable for re-use from site.

Q Stockpile excavated material to be re-used in area designated on site 312200.

R Remove excess excavated material from site.

3.05 REPAIR

A Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 312323.

3.06 FIELD QUALITY CONTROL

A See Division 1 for general requirements for field inspection and testing.

3.07 PROTECTION

A Divert surface flow from rains or water discharges from the excavation.

B Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

C Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

D Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

E Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 312316.13 - TRENCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A Trench excavation.
B Backfill and compaction.
C Excavation, backfilling and compacting for utilities outside the building to utility main connections.
D Backfilling of trenches excavated as a result of demolished utility lines and structures.

1.02 RELATED REQUIREMENTS

A Section 015713 - Temporary Erosion and Sediment Control.
B Section 312200 - Grading: Site grading.
C Section 312316 - Excavation: Building and foundation excavating.
D Section 312316.26 - Rock Removal: Removal of rock during excavating.
E Section 312319 - Dewatering.
F Section 312323 - Fill: Backfilling at building and foundations.
G Section 312323.13 - Flowable Fill: Backfill of utilities and excavations in the zone of influence of a foundation, footing or structural element inducing a load to the subgrade materials.
H Section 334100 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.03 DEFINITIONS

A Finish Grade Elevations: Indicated on drawings.
B Zone of Influence: Area beneath a footing or foundation that extends out from the bottom edge of the footing/foundation at a 45-degree angle down to a depth equal to 3 times the footing width.
C Fat Clays: Soil types with the classification of CH and a Plasticity Index (PI) above 30%.
D Shot Rock: Mixture of soil and rock material less than 1 cubic yard is size, with more than 15-percent soil.

1.04 REFERENCE STANDARDS

A AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; 2010.
B ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012.
C ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)); 2012.
D ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012.
E ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2024.
F ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)); 2012.
G ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
H ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
I ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
J ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2010.
K ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

1.05 SUBMITTALS

A See Division 1 for submittal procedures.
B Materials Sources: Submit name of imported materials source.
C Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
D Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

A When necessary, store materials on site in advance of need.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A General Fill- Fill Type Lean Clay (CL): Subsoil excavated on-site and imported from off-site as necessary for new work.
1. Graded.
2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
3. Conforming to ASTM D2487 Group Symbol CL.
4. Having no more than 5-percent rock/gravel in the top 24-inches in landscape areas, and no more than 15-percent rock/gravel in any location.

B Structural Fill - Fill Type DGA: Conforming to State of Kentucky Highway Department standard.
C Flowable Fill: A controlled low-strength material made of cement, water, sand, and an air-entraining admixture that it can be excavated by hand or use of a backhoe. See Section 312323.13.
D Graded Granular Fill (also referred to as Drainage Fill) - Fill Type #57 Crushed Limestone: Graded aggregate, conforming to State of Kentucky Highway Department standard.
E Pipe Bedding Granular Fill - Fill Type #8 Crushed Limestone: Fine aggregate, conforming to State of Kentucky Highway Department standard.

2.02 ACCESSORIES

A Underground Warning Tape: Suitable for direct burial.
1. Bright-colored, continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mils, 0.004 inch thick.

B Buried Detection Wire: Copper, single strand, continuously insulated, 12 AWG, suitable for direct burial.
C Geotextile Fabric: Non-biodegradable, non-woven , needle punched, 6-oz/sy(minimum weight) .

2.03 SOURCE QUALITY CONTROL

A See Division 1 for general requirements for testing and analysis of soil material.
B Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
C If tests indicate materials do not meet specified requirements, change material and retest.
D Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

A All trenching is unclassified, including trenching in bedrock.
B Previous fill materials have been placed on site in new work area. Fill materials consisted of soil and shot rock materials. As such, contractors shall anticipate encountering these materials during earthwork operations. It is highly recommended that the Contractor excavate test pits prior to preparation of their bids in order to further clarify the extent of the materials.
C Identify required lines, levels, contours, and datum locations.

D See Section 312200 for additional requirements.

E Locate, identify, and protect utilities that remain and protect from damage.

F Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

G Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect. Refer to Specification Section 312319 for additional Dewatering requirements.

3.03 TRENCHING

A Grade top perimeter of excavation to prevent surface water collection.

B Notify Architect of unexpected subsurface conditions and discontinue affected work in area until notified to resume.

C General: Cut trenches neat and clean.

1. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

D Utility Preparation: Rake trench bottom to uniform grade.

1. Remove unsuitable subgrade and backfill.
2. Compact subgrade to density equal to or greater than subsequent fill material requirements.

E Maintain trenches and prevent loose soil or rocks from entering.

F Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

G Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

H Do not interfere with 45 degree bearing splay of foundations (Zone of Influence) without approval from the Architect and Structural Engineer and approved specific backfill procedures.

I Cut trenches wide enough to allow inspection of installed utilities, but no more than twice the pipe diameter or 12-inches, whichever is greater for the total trench width.

J Hand trim excavations. Remove loose matter.

K Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.

L Remove excavated material that is unsuitable for re-use from site.

M Remove excess excavated material from site.

N Stockpile excavated material to be re-used in area designated in Section 312200.

O Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control. Refer to Specification Section 312319 for additional Dewatering requirements.

P Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect. Refer to Specification Section 312319 for additional Dewatering requirements.

Q If a trench is to be left open for more than 48-hours or when a rain event occurs, the trench is to be excavated an additional 4-inches and a lean concrete mud mat or layer of flowable fill should be placed 4-inches thick over the bottom of the excavation.

3.04 PREPARATION FOR UTILITY PLACEMENT

A Cut out soft areas of subgrade not capable of compaction in place. Backfill with:

1. Flowable Fill in areas located in the zone of influence of any footing or foundation.
2. Structural Fill in areas within the under pavements and synthetic turf areas that are not located in the zone of influence.
3. General Fill in landscape areas

B Remove loose soil and any debris from the excavation prior to installing the utility and backfill.
C Compact subgrade to density equal to or greater than requirements for subsequent fill material.
D Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

A Backfill to contours and elevations indicated using unfrozen materials.
B Employ a placement method that does not disturb or damage other work.
C Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
D Maintain within 2% of the optimum moisture content of fill materials to attain required compaction density.
E Granular/Crushed Stone Fill: Place and compact materials in equal continuous layers not exceeding 6 inches loose depth when using heavy compaction equipment (smooth drums, etc.) and not exceeding 4 inches loose depth when using hand operated or remote controlled equipment.
F Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches loose depth when using heavy compaction equipment (sheepsfoot rollers, etc.) and not exceeding 4 inches loose depth when using hand operated or remote controlled equipment.
G Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
H Correct areas that are over-excavated.
1. Synthetic Turf and Pavement Areas: Use structural fill, flush to required elevation, compacted to minimum 98 percent of maximum dry density.
I Compaction Density Unless Otherwise Specified or Indicated:
1. Under Synthetic Turf Fields and similar construction: 98 percent of maximum dry density.
2. At paving: 95 percent of maximum dry density.
3. At landscape locations: 85 percent of maximum dry density.
J Reshape and re-compact fills subjected to vehicular traffic.
K Underground Warning Tape:
1. Install 6 to 8 inches below finished grade, directly above buried pipe.
L Buried Detection Wire: Install 6 to 8 inches below finished grade, directly above buried pipe.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

A Utility Piping, Conduits, and Duct Bank:
1. Bedding: Use Fill Type Pipe bedding granular fill for the initial 4-inch thick utility setting/leveling bed.
2. If pipe is larger than 12-inches or if there are multiple pipes of any size utilizing the same trench (hoizontally or vertically), then the leveling bed and pipe bedding backfill is to be wrapped in filter fabric.
3. Cover with pipe bedding granular fill to 6-inches above the utility and finish with general fill in non-structural locations, and structural fill in pavement locations. If the utility is located within the zone of influence of a foundation, the trench is to be backfilled with flowable fill from the top of the initial utility setting/leveling bed and encompassing the utility until it is at least 1-foot above the zone of influence. When using flowable fill as a utility trench backfill, care should be taken to prevent the utility from floating by using deadman anchors or another anchoring system.
4. Fill up to subgrade elevation.
5. Compact to 98 percent of maximum dry density.
6. Compact in maximum 6 inch loose lifts to 98 percent of maximum dry density.
B At utility trenches excavated as a result of demolition and removal of existing utility lines and structures.
1. At Synthetic Turf and Paving Areas:

a. Trenches are to be backfilled with either flowable fill or DGA from the bottom of the removed utility's trench up to the subgrade elevation immediately adjacent to the trench. Refer to Specification 312323.13 - Flowable Fill.

2. At all other areas:
   a. Trenches are to be backfilled with General Fill or DGA from the bottom of the removed utility's trench up to the subgrade elevation immediately adjacent to the trench.

3.07 TOLERANCES

A Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.08 FIELD QUALITY CONTROL

A See Division 1 for general requirements for field inspection and testing.

B Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"), AASHTO T 180, or ASTM D698 ("standard Proctor").

C If tests indicate work does not meet specified requirements, remove work, replace and retest.

D Frequency of Tests: One (1) test for each 150 feet or less of trench length but no fewer than two (2) tests..

3.09 CLEANING

A Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

SECTION 312316.26 - ROCK REMOVAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A Removal of identified and discovered rock during excavation.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 312316 - Excavation: Excavation for new work.
C Section 312316.13 - Trenching: Trenching and backfill for new utilities.
D Section 312323 - Fill: Fill materials.

1.03 PRICE AND PAYMENT PROCEDURES

A All rock and bedrock excavation is unclassified.

1.04 DEFINITIONS

A Site Rock: Solid mineral material or bedrock with a volume in excess of 1/3 cubic yard or solid material that cannot be removed with a 3/4 cubic yard capacity power shovel without drilling.
B Trench Rock: Solid mineral material or bedrock with a volume in excess of 1/6 cubic yard or solid material that cannot be removed with a 3/4 cubic yard capacity power shovel .
C Weathered bedrock is not considered to be bedrock in this definition.
D Shot Rock: Mixture of soil and rock material less than 1 cubic yard is size, with more than 15-percent soil.

1.05 SUBMITTALS

A See Division 01 for Submittal Procedures.

1.06 PROJECT CONDITIONS

A Schedule Work to avoid disruption to occupied buildings nearby.
B Nothing in this specification section relieves the Contractor of any responsibilities for any damage to the existing structures or utilities as a result of rock removal activities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A Verify site conditions and note subsurface irregularities affecting work of this section.

3.02 PREPARATION

A Identify required lines, levels, contours, and datum.

3.03 ROCK REMOVAL

A Bedrock is to be removed as required for all new construction.
B Remove bedrock to provide 24-inches of soil cover, including topsoil, for all landscape areas located in areas to be re-graded.
C Bedrock is to be removed to a depth of 12-inches below subgrade elevation for the synthetic turf field area. If bedrock is encountered within 12-inches of the subgrade elevation for the synthetic turf field, the excavation is to be extended to bedrock and the bedrock removed per this specificaiton section to provide a 12-inch soil or DGA cushion between bedrock and the subgrade elevation of the synthetic turf field. Verification of the proper cushion is to be verified by the special inspections testing agency using rod soundings every 100-square feet of synthetic turf area.
D Shotrock is to be removed to a depth of 12-inches below subgrade elevation for the synthetic turf field area. If shotrock is encountered within 12-inches of the subgrade elevation for the synthetic turf field, the excavation is to be extended to remove the shotrock material to provide a 12-inch soil or DGA cushion between shotrock and the subgrade elevation of the synthetic turf field. Verification of the proper cushion

is to be verified by the special inspections testing agency using rod soundings every 100-square feet of synthetic turf area.

E Excavate and remove rock by mechanical methods only; use of explosives is prohibited.

F Mechanical Methods: Drill holes and utilize expansive tools or hoe-ramming/jack hammering techniques to fracture rock.

G Form level bearing at bottom of excavations.

H In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.

I Remove excavated materials from site.

J Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 312323.

K Correct unauthorized rock removal to directions of Architect.

3.04 FIELD QUALITY CONTROL

A Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

B Provide for visual inspection of removal of heave rock and replacement in an engineered manner that will minimize future settlement or swell of the fractured rock.

END OF SECTION

SECTION 312319 - DEWATERING

PART 1 GENERAL

1.01 SECTION INCLUDES

A Dewatering of site during construction.

1.02 RELATED SECTIONS

A Section 312316 - Excavation: Excavating for subdrainage system piping and surrounding filter aggregate.
B Section 312323 - Fill: Filter aggregate, up to subgrade elevation.
C Section 312316.13 - Trenching: Excavating and backfilling for site subdrainage systems.
D Section 312316.26 - Rock Removal
E Section 334600 - Subdrainage

1.03 REFERENCES

A ASTM D 2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2003.

1.04 PROJECT CONDITIONS

A The Contractor is to provide any temporary piping required to reroute downspout and roof drains away from the work areas until the permanent drainage system is installed and in working order.
B Dewatering systems shall be installed prior to excavation activities in order to control surface and ground water flows. Dewatering measures shall be maintained and remain installed for the duration of project activities.
C Damage or destabilization/degradation of the on-site soils due to failure to dewater or otherwise prepare the site will be repaired at the Contractors expense.

1.05 PERFORMANCE REQUIREMENTS

A Dewatering Performance:
1. Design, furnish, install, test, operate, monitor and maintain dewatering system of sufficient scope, size and capacity to control surface and ground water flow into excavations and permit construction to proceed on dry stable subgrades.
2. Dewatering systems shall be installed prior to excavation activities in order to control surface and ground water flows. Dewatering measures shall be maintained and remain installed for the duration of project activities.
3. Prevent water from ponding inside foundation walls, including after the floor slabs have been installed, and causing the foundation soils to become saturated.

PART 2 - NOT USED

PART 3 EXECUTION

3.01 INSTALLATION

A Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades and from flooding the Project site and surrounding areas.
B Reroute surface water away from excavated areas. Do not allow water to accumulate in excavations or on footings that have already been installed but not backfilled. Do not use utility, foundation or other trenches as temporary drainage ditches unless specifically designed for only that purpose.
C Prevent water from ponding inside the synthetic turf and pavement areas.
D The Contractor is to provide and maintain pumps, well points, sumps, suction and discharge lines and other dewatering system components necessary to convey water away from excavations and control the groundwater to a level at least 3'-0" below the lowest point of the excavation.
E Do not use open-sump pumping that leads to loss of fines, soil piping, subgrade softening and slope instability.

F Dispose of water removed by dewatering in a manner that avoids endangering public health, property and portions of work under construction or completed. Avoid creating an inconvenience to others, and maintain sedimentation controls as required by authorities having jurisdiction.

G All dewatering discharge is to be routed to a sediment pond or sediment bags so that the sediment can settle prior to the discharge water leaving the site or entering any waterway or storm sewer.

3.02 FIELD QUALITY CONTROL

A Dewatering systems are to be inspected at least weekly and any and all repairs or refinements performed to maintain a fully operational system that achieves the intended purpose.

B Standby equipment is to be maintained on site so that it can be immediately installed if failure of primary equipment occurs.

3.03 PROTECTION

A Protect pipe and dewatering system from other construction activities.

B Remove dewatering system at the completion of construction or when determined by the Architect that it is no longer needed.

END OF SECTION

SECTION 312323 - FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A Filling, backfilling, and compacting for athletic fields, pacing, and site structures.
B Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 015713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.
C Section 312200 - Grading: Site grading.
D Section 312316 - Excavation: Removal and handling of soil to be re-used.
E Section 312316.13 - Trenching: Excavating and backfilling for utility trenches outside the building to utility main connections.
F Section 312316.26 - Rock Removal: Removal of rock during excavating.
G Section 312323.13 - Flowable Fill
H Section 312513 - Permanent Erosion Controls
I Section 334100 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.03 DEFINITIONS

A Finish Grade Elevations: Indicated on drawings.
B Zone of Influence: Area beneath a footing or foundation that extends out from the bottom edge of the footing/foundation at a 45-degree angle down to a depth equal to 3 times the footing width.

1.04 REFERENCE STANDARDS

A AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; 2010.
B ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012.
C ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2024.
D ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)); 2012.
E ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
F ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
G ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
H ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2010.
I ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

1.05 SUBMITTALS

A See Division 1 Sections for submittal procedures.
B Materials Sources: Submit name of imported materials source.
C Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.
D Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

A When necessary, store materials on site in advance of need.

B When fill materials need to be stored on site, locate stockpiles in a locaiton coordinated with the Construction Manager.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.
4. Bagged materials are to be covered with tarps until they can be installed or moved to a covered storage area.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A General Fill- Fill Type Lean Clay: Subsoil excavated on-site and imported as necessary for new work.

1. Graded.
2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
3. Conforming to ASTM D2487 Group Symbol CL.
4. Having no more than 5-percent rock/gravel in the top 24-inches in landscape areas, and no more than 15-percent rock/gravel in any location.

B Structural Fill- Fill Type DGA: Conforming to State of Kentucky Highway Department standard.

C Flowable Fill: A controlled low-strength material made of cement, water, sand, and an air-entraining admixture that it can be excavated by hand or use of a backhoe. See Section 312323.13.

D Graded Granular Fill (also referred to as Drainage Fill) - Fill Type #57 Crushed Limestone: Crushed aggregate, conforming to State of Kentucky Highway Department Standard.

E Coarse Granular Fill - Fill Type #2 Crushed Limestone: Coarse aggregate, conforming to State of Kentucky Highway Department standard.

2.02 ACCESSORIES

A Geotextile Fabric: Water pervious type, black polypropylene, non-biodegradable, non-woven , needlepunched, 6 oz minimum weight .

2.03 SOURCE QUALITY CONTROL

A See Section 014000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.

C If tests indicate materials do not meet specified requirements, change material and retest.

D Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

A All fill material is unclassified.

B Verify that survey bench marks and intended elevations for the Work are as indicated.

C Identify required lines, levels, contours, and datum locations.

D Verify subdrainage, and trench backfilling installation has been inspected.

E Proof roll all areas to receive fill prior to placing fill. Proof rolls should only be done when the soils are are near optimum moisture content. Any areas that do not pass proof roll are to be stabilized in accordance with the project documents. Any suitable soils removed as part of the stabilization process due to moisture content issues are to be moisture conditioned and used as fill in other locations.

F Confirm that fat clay (CH) material has been removed under all athletic synthetic turf and pavement areas so that no fat clay is located within 24-inches of the top of subgrade.

G Verify that rock has been removed under all athletic synthetic turf and pavement areas so that no rock is located within 24-inches of the top of subgrade.

H Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.

B Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill or as outlined per over-excavation below.

C Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

E Ensure that existing slopes have been benched and are ready to accept new fill materials. Refer to Specification Section 312200 for benching requirements.

3.03 FILLING

A Fill to contours and elevations indicated using unfrozen materials.

B Soils are not to be "over-compacted" or worked in a manner that will cause them to break down and lose strength.

C Employ a placement method that does not disturb or damage other work.

D Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

E Maintain optimum moisture content of fill materials to attain required compaction density.

F Granular/Crushed Stone Fill: Place and compact materials in equal continuous layers not exceeding 6 inches loose depth when using heavy compaction equipment (smooth drums, etc.), and layers not exceeding 4 inches loose depth when using hand operated or remote controlled equipment.

G Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches loose depth when using heavy compaction equipment (sheepsfoot rollers, etc.), and layers not exceeding 4 inches loose depth when using hand operated or remote controlled equipment.

H Slope grade away from synthetic turf and pavement areas a minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

I Correct areas that are over-excavated.

1. Synthetic Turf and Pavement Areas: Use structural fill, flush to required elevation, compacted to minimum 98 percent of maximum dry density.

J Compaction Density Unless Otherwise Specified or Indicated:

1. Under paving, synthetic turf, and similar construction: 98 percent of maximum dry density.

K Reshape and re-compact fills subjected to vehicular traffic.

L Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control. Refer to Specificaiton Section 312319 for additional Dewatering requirements.

3.04 FILL AT SPECIFIC LOCATIONS

A Use general fill unless otherwise specified or indicated.

B Mass Fill :

1. Use General Fill or Structural Fill. Fill is to be uniform and contractor shall not mix materials during filling operations.
2. Fill up to subgrade elevations.
3. Maximum depth per lift: 6 inches, compacted.
4. Compact to minimum 98 percent of maximum dry density.

C Excavations within the zone of influence (ZOI) of any footing or foundation:

1. Use Flowable Fill.

D At Lawn Areas:

1. Use general fill.
2. Compact to 85 percent of maximum dry density.
3. See Section 312200 for topsoil placement.

3.05 TOLERANCES

A Top Surface of General Filling: Plus or minus 1 inch from required elevations.

B Top of Surface of Filling for synthetic turf competition areas:

1. 0.25-inches total (+/- 1/8") within a 25-foot grid.

3.06 FIELD QUALITY CONTROL

A See Division 1 Sections for general requirements for field inspection and testing.

B Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

C Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D1557 ("modified Proctor"), or ASTM D698 ("standard Proctor").

D If tests indicate work does not meet specified requirements, remove work, replace and retest.

E Frequency of Tests: One (1) test for every 2000 sq. ft. or less of paved area or building slab per lift but in no case fewer than two (2) tests per lift.

F The Contractor should anticipate and allow for testing time of encountered and imported materials. Some testing can take three to four business days.

G Proof roll compacted fill at surfaces that will be under paving and synthetic turf areas.

3.07 CLOSEOUT

A The Sportsfield Contractor must verify that a qualified representative has inspected the installation and that the finished field surface conforms to the design requirments.

3.08 CLEANING

A See Division 01 for Construction Waste Management and Disposal and additional related requirements.

B Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

SECTION 312323.13 - FLOWABLE FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A Flowable Fill or Controlled Low Strength Materials (CLSM)
B Backfill for site utilities within the zone-of-influence of any footing/foundation.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 312316.13 - Trenching: Excavation and backfilling for foundations and utilities outside the building footprint.
C Section 312323 - Fill: Filling and Compaction.

1.03 REFERENCE STANDARDS

A ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.
B ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
C ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.
D ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.
E ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2011a.
F ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2012.
G ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
H ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2010b.
I ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
J ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2011.
K ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2011.
L ASTM D4832 - Preparation and Testing of Controlled Low Strength Material Test Cylinders
M ASTM D5971 - Sampling Freshly Mixed Controlled Low Strength Material
N ASTM D6103 - Flow Consistency of Controlled Low Strength Material
O ASTM D6023 - Unit Weight, Yield, Cement Content and Air Content (Gravimetric) of Controlled Low Strength Material

1.04 SUBMITTALS

A See Division 1 Sections for submittal procedures.
B Product Data: Provide data on mix materials and admixtures.
C Design Data: Mix design and test results showing that the mix design meets the mix and performance requirements.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A Obtain cementitious materials from same source throughout.
B Cement: ASTM C150/C150M Air Entraining - Type IA portland type, grey color.
C Fine Mix Aggregates: ASTM C33.
D Fly Ash: ASTM C 618, Class F - Optional for Non-Excavatable flowable fill.
E Water: Clean, and not detrimental to concrete.
F Air Entrainment Admixture: ASTM C260.
G Chemical Admixtures: ASTM C494/C494M, Type A - Water Reducing.

1. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

2.02 ACCESSORIES

A Utility Anchors: Manufactured anchorsSurface Retarder:
1. Manufactured anchoring system to prevent vertical and horizontal movement of the utility during installation and curing of Flowable Fill/CLSM.

2.03 FLOWABLE FILL/CLSM MIX DESIGN

A The Flowable Fill/CLSM material is to be a self-leveling and self-compacting, cementitious material with low compressive strength (see below).

B Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

C If flowable fill is to be pumped, a modified mixture shall be submitted along with test results that indicate that the mix will meet the strength restrictions. In addition, the supplier is to ensure that the air content at the point of discharge from the pump meets the below requirements.

D Excavatable Flowable Fill Properties (not-pumped):
1. Compressive Strength, when tested in accordance with ASTM D4832 at 28 days: 30 to 80 psi maximum. Strength shall not exceed 130 psi at 180-days.
2. Fly Ash Content: None
3. Cement Content: 50 to 100 lb per cubic yard.
4. Water: Content to provide self-leveling mix with flowability per below and without excess bleed water.
5. Total Air Content: 20-30 percent, determined in accordance with ASTM D6023.
6. Flowability: 6 to 8 inches in accordance with ASTM D6103.
7. Unit Weight (wet): 90-115 pcf
8. Aggregate Size: Concrete Sand

2.04 MIXING

A Transit Mixers: Comply with ASTM C94/C94M.

B Do not add water to the mix once the truck has left the concrete plant.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify trench subgrade is acceptable and ready to support fill and future loads.

B Verify gradients and elevations of base are correct.

C Verify that utilities have been properly anchored to eliminate vertical and horizontal movement.

3.02 PREPARATION

A Wrap utilities with protective felt paper or other protective wrap as approved by the governing body for the utility.

B Notify Testing Agent minimum 24 hours prior to filling operations.

3.03 FORMING

A Place and secure forms as necessary at the ends of each pour.

3.04 COLD AND HOT WEATHER INSTALLATION

A Follow recommendations of ACI 305R when installing during hot weather.

B Follow recommendations of ACI 306R when installing during cold weather.

C Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

D Protect from freezing for a minimum of 36-hours after placement.

3.05 PLACING FLOWABLE FILL/CLSM

A Place fill in accordance with ACI 304R.

B Place fill material continuously over the full width of the trench/excavation.

3.06 TOLERANCES

A The contractor should anticipate a 1/8-inch per foot of depth shrinkage of the Flowable Fill/CLSM material during the initial 7-day curing period.

B Maximum Variation From True Position Post-Cure: Plus 1/4 inch (no minus).

3.07 FIELD QUALITY CONTROL

A The Owner will employ an independent testing agency to perform field quality control tests, as specified in Division 1 Sections.

1. Provide free access to Flowable Fill/CLSM operations at project site and cooperate with appointed firm.
2. Submit proposed mix design of each class of Flowable Fill/CLSM to inspection and testing firm for review prior to commencement of installation operations.
3. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

B Compressive Strength Tests: ASTM D4832. For each test, mold and cure five Flowable Fill/CLSM test cylinders. Obtain test samples for every truck delivered.

1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as material it represents.
2. Perform one flowability test and one air content test for each set of test cylinders taken.
3. Perform compression tests at 7-days, 14-days, 28-days, 56-days and 180-days

C Maintain records of placed Flowable Fill/CLSM items. Record date, pour time, batch time, location of pour, quantity, air temperature, and test samples taken. All test reports are to by typed.

D Any tests or time limits that do not meet the specified requirements are to be reported to the Contractor and that material shall be considered unacceptable. Any material placed that is deemed unacceptable shall be removed and replaced with acceptable material.

3.08 PROTECTION

A Immediately after placement, protect from premature drying, excessive hot or cold temperatures, and mechanical injury for a minimum of 36-hours.

B Do not subject the fill material to foundation or other loads that may exceed the material strength.

END OF SECTION

SECTION 312513 - PERMANENT EROSION CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A Erosion blankets and netting.
B Slope protection
C protection (non-rip rap)

1.02 RELATED SECTIONS

A Division 01 - Comply with all related requirements.
B Section 015713 - Temporary Erosion Controls
C Section 312200 - Grading
D Section 311000 - Site Clearing.
E Section 312316 - Excavation.
F Section 312323 - Fill: Filling and compaction.
G Section 313413 - Flexible Concrete Erosion Control
H Section 329219 - Seeding: Finish ground cover.

1.03 REFERENCES

A Kentucky Erosion Prevention and Sediment Control Field Guide by Kentucky Division of Conservation. Refer to these guidelines for construction and maintenance of erosion control items.
B Kentucky Division of Water (www.water.ky.gov)

1.04 SUBMITTALS

A Erosion Control Material Data: Include manufacturer, product and design calculations for each product used.

1.05 QUALITY ASSURANCE

A Perform Work in accordance with State of Kentucky, Highway Department standards.

1.06 PROJECT CONDITIONS

A Protect above- and below-grade utilities that remain.
B Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from installation equipment and vehicular traffic.

PART 2 PRODUCTS

2.01 MATERIALS

A High Velocity Erosion-Control Blankets: Coconut-fiber mat enclosed in a double-net, UV stabilized polypropylene mesh with a minimum 36-month design life. Include manufacturer's recommended biodegradable stakes, 6 inches (150 mm) long. Acceptable products are:
1. Curlex III by American Excelsior Company
2. C125 by North American Green
3. ECC-2 by East Coast Erosion Blankets
4. Enviroscape C4000

B Long-Term Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a double-net, photo-degradable woven mesh with a minimum 1-year design life. Include manufacturer's recommended biodegradable stakes, 6 inches long. Acceptable products are:
1. Curlex II by American Excelsior Company
2. S150 by North American Green
3. ECS-2 and ECX-2 by East Coast Erosion Blankets
4. Enviroscape S2000

C Short-Term Erosion-Control Blankets: Biodegradable twisted jute or spun-coir mesh in a single-net product with straw or coconut-fiber fill. Include manufacturer's recommended steel wire staples, 6 inches long. Acceptable products are:
1. Curlex I by American Excelsior Company
2. S75 by North American Green
3. ECS-1 by East Coast Erosion Blankets
4. Enviroscape S1000

D Other Materials: See Section 312323.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify that finish grading and intended elevations for the Work are as indicated and that all debris and rock fragments larger than 1/2-inch have been removed from the area to be covered.

3.02 PREPARATION

A Identify required lines, levels, contours, and datum.

B Identify and mark areas to receive erosion controls.

3.03 INSTALLATION

A Protect areas to be seeded as follows:
1. Ditches and drainage swales are to receive high-velocity erosion-control blankets.
2. Slopes 4:1 (H:V) or greater are to receive long-term erosion-control blankets.
3. Slopes between 4:1 and 6:1 are to receive short-term erosion-control blankets.
4. If drawings indicate installation of flexible concrete erosion controls, the flexible concrete erosion controls are to be installed over the erosion control blankets and not as a substitute.

B Roll out erosion controls beginning at the bottom of the slope or the lowest end of the ditch line.

C Overlap ends of the controls a minimum of 24-inches or per the manufacturers recommendation, whichever is larger.

D Overlap the edges of the controls a minimum of 12-inches or per the manufacturers recommendation, whichever is larger.

E Install biodegradable anchors per the manufacturers recommendation. If erosion controls begin to pull up, slide or otherwise come loose, install additional anchors as needed for proper installation.

F Sod can be used for all slopes identified above (not drainage swales or ditches) as a substitute for the listed erosion controls. Sod is to be laid perpendicular to the slope and staked to prevent slipping.

3.04 CLEANING AND PROTECTION

A Leave site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 313413 - FLEXIBLE CONCRETE EROSION CONTROL MAT

PART 1 GENERAL

1.01 SECTION INCLUDES

A Flexible Concrete Mat at headwall out falls.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 312200 - Grading.
C Section 312316 - Excavation.
D Section 312323 - Fill
E Section 312513 - Permanent Erosion Controls

1.03 QUALITY ASSURANCE

A Perform Work in accordance with the manufacturer's recommendations and as outlined below.

PART 2 PRODUCTS

2.01 MATERIALS

A Concrete.
B Concrete specifications.
1. Mix classification 4000 AE.
2. Strength 4000 PSI per 28 days.
3. Air content 4-8%.
4. Slump 9" after super.
5. Coarse Aggregate max. size 3/8 inch.
6. Maximum water-cement ratio 0.46.
7. Quantities per cubic yard:
a. 560 lbs. Type 1 cement.
b. 50 lbs granular cement.
c. 1220 lbs fine aggregate (sand).
d. 1600 lbs course aggregate (gravel).
e. 276 lb water.
f. 6 oz. Air Entrainment agent.
g. 64 oz. 260 AE Admixture.
h. 1 lb polyfiber.
8. Concrete Cobblestone sizes: rectangular; 4 inches to 13 inches length/width, 1-3/4 inches to 5 inches thick at the crown.
9. Concrete Cobblestone weight 10 lb per SF minimum.

C Geogrid Reinforcement
1. 10oz/sq.yd Mass/Unit Area., ASTM D-5261
2. Aperture size 1.2 inches
3. 70 Percent Open Area, CW02215
4. Wide Width Tensile Strength @ Ultimate Machine Direction and Cross Machine Direction, both 2600 lb/ft, ASTM D-6637.
5. Creep Limited Strength Machine Direction and Cross Machine Direction @ 5%, 1610 lb/ft, ASTM D-5262.
6. Elongation at Break 4-6%, ASTM-D6637
7. Long Term Design Strength, Machine Direction:
a. Sand, Silt and Clay and Sandy Gravel, 1465 lb/ft, FHWA NHI-00-044
b. 2" Minus Coarse Gravel, 1285 lb/ft, FHWA NHI-00-044

PART 3 EXECUTION

3.01 PLACEMENT

A Prepare ground surface per manufacturer's recommendations for specific site conditions including preparation of topsoil planting media.

B Seed area per Section 329219 - Seeding.

C Install long term erosion control blanket over prepared and seeded topsoil prior to installation of the Flexible Concrete Mat.

D Place Flexible Concrete Mat roll over erosion control blankets, unroll and cut to length. Overlap flexible concrete mat sections minimum 18 inches and pin unless system is interlocking.

E Install anchors along edges and hog ring connectors every 2-feet at adjoining end and every 5-feet along edges of adjacent rolls unless the manufacturer recommends closer spacing.

END OF SECTION

SECTION 321123 - AGGREGATE BASE COURSE

PART 1 GENERAL

1.01 SECTION INCLUDES

A Aggregate base course.
B Paving aggregates.

1.02 RELATED REQUIREMENTS

A Section : Preparation of site for base course.
B Section : Compacted fill under base course.
C Section : Finish concrete surface course.
D Section 334913 - Storm Drainage Manholes, Frames and Covers: Manholes and frames.

1.03 REFERENCE STANDARDS

A AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 1965 (2004).
B AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; 2010.
C ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
D ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012.
E ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)); 2012.
F ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
G ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
H ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2010.
I ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

1.04 SUBMITTALS

A See Division 1 Sections for submittal procedures.
B Materials Sources: Submit name of imported materials source.
C Aggregate Composition Test Reports: Results of laboratory tests on actual materials used.
D Compaction Density Test Reports.

1.05 DELIVERY, STORAGE, AND HANDLING

A When necessary, store materials on site in advance of need.
B Aggregate Storage, General:
1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 MATERIALS

A Coarse AggregateType #2 Crushed Limestone: Coarse aggregate, conforming to State of Kentucky Highway Department standard.
B Blended Aggregate Type DGA: Pug DGA conforming to State of Kentucky Highway Department standard.
C Herbicide:

2.02 SOURCE QUALITY CONTROL

A See Division 1 for Quality Requirements for testing and analysis of aggregate materials.
B Where aggregate materials are specified using ASTM D2487 classification, test and analyze samples for compliance.
C If tests indicate materials do not meet specified requirements, change material and retest.
D Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify that survey bench marks and intended elevations for the work are as indicated.
B Verify substrate has been inspected, gradients and elevations are correct, and is dry.
C Proof-roll areas to receive aggregate base course material and have proof-roll approved by the soils testing agent.
D Due to the type of soils encountered on the site, proof-rolling during wet periods or when the existing soils are above optimum moisture content will not be acceptable. All proof-rolling will need to be done during dry conditions.

3.02 PREPARATION

A Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
B Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

A Under :
1. Place Blended Aggregate Type DGA to a total compacted thickness identified on the drawings.
2. Compact to percent of maximum dry density.
B Place aggregate in maximum layers and compact to specified density.
C Level and contour surfaces to elevations and gradients indicated.
D Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
E Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
F Use mechanical tamping equipment in areas inaccessible to compaction equipment.
G Apply herbicide to finished surface.

3.04 TOLERANCES

A Flatness: Maximum variation of measured with straight edge.
B Scheduled Compacted Thickness: Within .

3.05 FIELD QUALITY CONTROL

A See Division 1 Sections for general requirements for field inspection and testing.
B on compacted aggregate base course in accordance with .
C in relation to compaction curve determined by testing uncompacted material in accordance with .
D If tests indicate work does not meet specified requirements, .
E Frequency of Tests:
F Proof roll compacted aggregate at surfaces that will be under .

3.06 CLEANING

A Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

SECTION 321313 - CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A Concrete sidewalks.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 312200 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.
C Section 312323 - Fill: Compacted subbase for paving.
D Section 321123 - Aggregate Base Course: DGA base course.
E Section 321373 - Joint Sealers: Sealant for joints.
F Section 321613 - Concrete Curb and Gutters

1.03 REFERENCE STANDARDS

A ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
B ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
C ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
D ACI 305R - Hot Weather Concreting; 2010.
E ACI 306R - Cold Weather Concreting; 2010.
F ASTM A36 - Steel plate for plate dowel systems.
G ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
H ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
I ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.
J ASTM B633 Type II - Electroplated zinc for plat dowel systems
K ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
L ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.
M ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
N ASTM C150/C150M - Standard Specification for Portland Cement; 2015.
O ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2014.
P ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
Q ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.
R ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.
S ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.
T ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).
U ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2004a (Reapproved 2013).

1.04 SUBMITTALS

A See Division 1 Sections for submittal procedures.

B Product Data: Provide data on joint filler, fiber reinforcement, admixtures, fiber reinforcement, curing compound, fiber reinforcement, and fiber reinforcement.
C Installer qualifications using Macro Fiber reinforcement in finished, exterior concrete pavement.
D Design Data: Indicate pavement thickness, designed concrete strength, reinforcement, and typical details.

PART 2 PRODUCTS

2.01 FORM MATERIALS

A Form Materials: As specified in Section 031000, conform to ACI 301.
B Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
1. Thickness: 3/8 inch.

2.02 REINFORCEMENT

A Reinforcing Steel: ASTM A615/A615M, Grade 80 (80,000 psi) yield strength; deformed billet steel bars; unfinished.
B Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.
C Plate Dowels: Light and Medium Duty Concrete - ASTM A36 steel plates with electroplated zinc coating meeting ASTM B633 Type II. Plate sizes and spacing to meet specified concrete thickness.

2.03 CONCRETE MATERIALS

A Obtain cementitious materials from same source throughout.
B Concrete Materials: Provide in accordance with State of Kentucky Highways standards.
C Cement: ASTM C150/C150M, Normal - Type I Portland cement, gray color.
D Fine and Coarse Mix Aggregates: ASTM C33/C33M.
E Water: Clean, and not detrimental to concrete.
F Fiber Reinforcement: Shrinkage crack control, micro synthetic, fibrilated, polypropylene fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 3/4 to 1 inch length and designed to reduce shrinkage cracking of concrete.
1. Acceptable Products:
a. PSI FIBERSTRAND F by Euclid Chemical
b. Procon F-E by Nycon Corporation
c. Fibermesh 300 by Propex Operating Company
d. Econo-Net by Forta Corporation
e. MasterFiber M 100 by BASF
G Air-Entraining Admixtures: ASTM C260/C260M.
H Chemical Admixtures: ASTM C494/C494M, Type A - Water Reducing.
1. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

2.04 ACCESSORIES

A Curing Compound: ASTM C309, Type 1, Class A.
B Curing Compound:
1. Sonneborn's Sonosil
2. L&M's L&M Cure
3. Dayton Superior's Day Chem Sil-Cure (J-13)
C Joint Sealer: Type as specified in Section 321373.

2.05 CONCRETE MIX DESIGN

A Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

B Micro Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions. Fiber is to be added at the plant after all other materials have been added, and have a minimum mix time of 5-minutes..

C Concrete Properties:

1. Compressive strength (prior to fiber), when tested in accordance with ASTM C39/C39M at 28 days; 4500 psi. Testing of the concrete mix prior to adding fiber and again after fiber has been added is required to set the compressive strength requirement for fiber reinforced concrete. This should be done for the first pour of each mix design and the results used to confirm future pours.
2. Cement Content: Minimum 600 lb per cubic yard.
3. Water-Cement Ratio: Maximum 0.44 percent by weight.
4. Total Air Content: 6 percent +/- 1%, determined in accordance with ASTM C 173/C 173M.
5. Maximum Slump: 4 inches using base design, 5 inches when using fiber and mid-range water reducer, 6 inches when using a mid-range water reducer, +/- 1-inch.
6. Maximum Aggregate Size: 1 inch.

2.06 MIXING

A Transit Mixers: Comply with ASTM C94/C94M.

B Do not add water to the mix once the truck has left the concrete plant.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

B Verify gradients and elevations of base are correct.

3.02 SUBBASE

A See Section 321123 for construction of base course for work of this Section.

3.03 PREPARATION

A Moisten base to minimize absorption of water from fresh concrete.

B Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.04 FORMING

A Place and secure forms to correct location, dimension, profile, and gradient.

B Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

A Place reinforcement as indicated and per the manufacturers recommendations.

B Provide doweled joints at all isolation joints with one end of dowel set in capped sleeve to allow longitudinal movement.

3.06 COLD AND HOT WEATHER CONCRETING

A Follow recommendations of ACI 305R when concreting during hot weather.

B Follow recommendations of ACI 306R when concreting during cold weather.

C Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

A Place concrete in accordance with ACI 304R.

B Do not add water to concrete.

C Ensure reinforcement, inserts, embedded parts, formed jointsand concrete form work are not disturbed during concrete placement.

D Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

E Place concrete to indicated pattern.

3.08 JOINTS

A Align sidewalk joints with existing adjacent pavement.

B Place 3/8 inch wide isolation joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.

1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
2. Secure to resist movement by wet concrete.

C Provide tooled contraction control joints:

1. In pattern shown on drawings.

3.09 FINISHING

A Area Paving: Light broom, texture perpendicular to pavement direction.

B Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius. Remove tooling marks to prevent a picture frame effect.

C Remove "slop" created by the concrete finishing from all joints and edges.

D Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.10 JOINT SEALING

A See Section 321373 for joint sealer requirements.

3.11 TOLERANCES

A Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

B Maximum Variation From True Position: 1/4 inch.

3.12 FIELD QUALITY CONTROL

A Allow the independent testing agency to perform field quality control tests, as specified in Division 1.

1. Provide free access to concrete operations at project site and cooperate with appointed firm.
2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
3. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

B Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.

1. Test fiber reinforced concrete prior to the addition of fiber and again after fiber has been added to set the baseline for the fiber reinforced compressive strength, slump and air content. This is to be done for the first pour of each mix design, and the results used for later pour strength requirements.
2. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
3. Perform one slump test and one air content test for each set of test cylinders taken.

C Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken. All test reports are to by typed.

D Any tests or time limits that do not meet the specified requirements are to be reported to the Contractor and that concrete shall be considered unacceptable.

3.13 PROTECTION

A Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B Do not permit pedestrian traffic over pavement for 2 days minimum after finishing.

C Do not permit vehicular traffic over pavement until 75 percent design strength of concrete has been achieved.

D All pavements that are soiled or otherwise dirty are to be pressure washed and rinsed upon completion of the construction and landscaping work.

END OF SECTION

SECTION 321373 - PAVEMENT JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A Division 01 - Comply with all related requirements.

1.02 SUMMARY

A This Section includes the following:
1. Expansion and contraction joints within cement concrete pavement.
2. Joints between concrete banding and detectable warning pavers.

B Related Sections include the following:
1. Section 321313 - Concrete Paving: constructing joints in concrete pavement.
2. Section 321613 - Concrete Curbs and Gutters

1.03 SUBMITTALS

A Division 01 - Comply with all related requirements.

B Product Data: For each joint sealant product indicated.

C Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

D Qualification Data: For Installer.

E Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
1. Materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

F Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for sealants.

1.04 QUALITY ASSURANCE

A Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

B Preconstruction Compatibility and Adhesion Testing: Submit to joint sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
1. Use ASTM C 1087 or manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

C Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing of current sealant products within a 36-month period preceding the Notice to Proceed with the Work.
1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 for testing indicated, as documented according to ASTM E 548.

1.05 DELIVERY, STORAGE, AND HANDLING

A Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.

B Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.06 PROJECT CONDITIONS

A All expansion, isolation and cold joints, including those in concrete curbs, are to receive joint sealant.

B Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer.
2. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 40 deg F (4.4 deg C), whichever is higher.
3. When joint substrates are wet or covered with frost.
4. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
5. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.02 MATERIALS, GENERAL

A Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint sealant manufacturer based on testing and field experience.

B Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.03 COLD-APPLIED JOINT SEALANTS

A Type S, Grade NS, Class 25 Polyurethane Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag urethane sealant complying with ASTM C920

1. Sikaflex-1a
2. Bostik Seal 'N' Flex FC
3. Tremco Vulkem 116

2.04 JOINT SEALANT BACKER MATERIALS

A General: Provide joint sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint sealant manufacturer based on field experience and laboratory testing.

B Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

2.05 PRIMERS

A Primers: Product recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant substrate tests and field tests.

PART 3- EXECUTION

3.01 EXAMINATION

A Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions.

B Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer, based on preconstruction joint sealant substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.03 INSTALLATION OF JOINT SEALANTS

A General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C Install backer materials of type indicated to support sealants during application and at position required to produce cross sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of backer materials.
2. Do not stretch, twist, puncture, or tear backer materials.
3. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.

D Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses provided for each joint configuration.
3. Produce uniform, cross sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealants from surfaces adjacent to joint.
2. Use tooling agents that are approved in writing by joint sealant manufacturer and that do not discolor sealants or adjacent surfaces.

F Provide joint configuration to comply with joint sealant manufacturer's written instructions, unless otherwise indicated.

G Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

3.04 CLEANING

A Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.05 PROTECTION

A Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs,

cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

B Apply clean, white, silica sand dusting to the finished tooled surface of the joint sealant to help prevent tracking of the material.

END OF SECTION 321373

SECTION 321613 - CONCRETE CURBS AND GUTTERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A Concrete header curbs and curbs.

1.02 RELATED REQUIREMENTS

A Section 312200 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.
B Section 312323 - Fill: Compacted subbase for paving.
C Section 321123 - Aggregate Base Courses: DGA base course.
D Section 321373 - Joint Sealers: Sealant for joints.
E Section 321823.29 - Artificial Turf: Perimeter attachment for artificial turf.

1.03 REFERENCE STANDARDS

A ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
B ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.
C ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
D ACI 305R - Hot Weather Concreting; American Concrete Institute International; 1999.
E ACI 306R - Cold Weather Concreting; American Concrete Institute International; 1988 (Reapproved 2002).
F ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2007.
G ASTM C 33 - Standard Specification for Concrete Aggregates; 2007.
H ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2005.
I ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete; 2007.
J ASTM C 150 - Standard Specification for Portland Cement; 2007.
K ASTM C 173/C 173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2008a.
L ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2006.
M ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2007.
N ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete; 2008a.
O ASTM C 685/C 685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2007.
P ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2008).
Q ASTM D 1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2004a (Reapproved 2008).

1.04 SUBMITTALS

A See Division 1 Sections for submittal procedures.
B Product Data: Provide data on joint filler, admixtures, curing compound, and fiber reinforcement.
C Installer qualifications using Macro Fiber reinforcement in finished, exterior concrete.
D Design Data: Indicate curb/gutter thickness, designed concrete strength, reinforcement, and typical details. Separate mix designs are required for conventionally formed concrete and machine placed or slip-formed concrete.

PART 2 PRODUCTS

2.01 FORM MATERIALS

A Form Materials: Conform to ACI 301 and as follows.

B Steel forms with self-aligning joints designed to withstand the lateral and vertical loads associated with the concrete placement. Form sections are to be a minimum of 10-feet in length for runs that are 10-feet or longer in length.

C Joint Filler: Preformed; non-extruding bituminous type (ASTM D 1751) or sponge rubber or cork (ASTM D 1752).

1. Thickness: 3/8 inch.

2.02 REINFORCEMENT

A Reinforcing Steel: ASTM A 615/A 615M Grade 40 (280); deformed billet steel bars; unfinished finish.

B Steel Welded Wire Reinforcement: Plain type, ASTM A 185/A 185M; in flat sheets; unfinished.

C Dowels: ASTM A 615/A 615M Grade 40 (280); deformed billet steel bars; unfinished finish.

2.03 CONCRETE MATERIALS

A Obtain cementitious materials from same source throughout.

B Concrete Materials: Provide in accordance with State of Kentucky Highways standards.

C Cement: ASTM C 150 Air Entraining - Type IA portland type, grey color.

D Fine and Coarse Mix Aggregates: ASTM C 33.

E Water: Clean, and not detrimental to concrete.

F Fiber Reinforcement: Structural, macro synthetic, fibrilated, polypropylene fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1.5 to 2 inch length and manufactured to provide post-cure concrete strength and increase freeze/thaw resistance.

1. Acceptable Products:
   a. TUF-STRAND SF by Euclid Chemical
   b. Nycon-XL200 by Nycon Corporation
   c. Fibermesh 650 by Propex Operating Company
   d. Forta-Ferro by Forta Corporation

G Air Entrainment Admixture: ASTM C 260.

H Chemical Admixtures: ASTM C 494/C 494M, Type A - Water Reducing.

1. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

2.04 ACCESSORIES

A Curing Compound: ASTM C 309, Type 1, Class A.

B Joint Sealer: Type as specified in Section 321373.

2.05 CONCRETE MIX DESIGN

A Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

C Macro Fiber Reinforcement: Add to mix at rate of 7 pounds per cubic yard, or as recommended by manufacturer for specific project conditions. Fiber is to be added at the plant after all other materials have been added, and have a minimum mix time of 5-minutes. Fiber reinforcement is only to be used when slip forming of concrete is performed.

D Concrete Properties:

1. Compressive Strength (prior to adding fiber), when tested in accordance with ASTM C 39/C 39M at 28 days: 4500 psi. Testing of the concrete mix prior to adding fiber and again after fiber has been added is required to set the compressive strength requirement for fiber reinforced concrete.

This should be done for the first pour of each mix design and the results used to confirm future pours.

2. Cement Content: Minimum 639 lb per cubic yard.
3. Water-Cement Ratio: Maximum 0.44 percent by weight.
4. Total Air Content: 6 percent +/- 1%, determined in accordance with ASTM C 173/C 173M.
5. Maximum Slump: 4 inches using base design, 5 inches when using fiber and mid-range water reducer, 6 inches when using a mid-range water reducer, +/- 1-inch.
6. Maximum Aggregate Size: 1 inch.

2.06 MIXING

A Transit Mixers: Comply with ASTM C 94/C 94M.

B Do not add water to the mix once the truck has left the concrete plant.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify compacted subgrade is acceptable and ready to support imposed loads.

B Verify gradients and elevations of base are correct.

3.02 SUBBASE

A See Section 321123 for construction of base course for work of this Section.

3.03 PREPARATION

A Moisten base to minimize absorption of water from fresh concrete.

B Coat surfaces of storm structure frames with oil to prevent bond with concrete curb/gutter.

C Notify Architect minimum 24 hours prior to commencement of concreting operations. Architect is to review and approve sample pours prior to installation of permanent concrete.

3.04 FORMING

A Place and secure forms to correct location, dimension, profile, and gradient.

B Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

D Slip forming can be used for curb and gutter combinations. The slip form machine shall be self-propelled and designed to place, consolidate and finish the concrete in one pass, and be adjustable to install gutter lines that slope away from the curb where required.

3.05 REINFORCEMENT

A Place reinforcement as indicated.

B Use fiber reinforcement for all concrete.

C Provide doweled joints as indicated with one end of dowel set in capped sleeve to allow longitudinal movement.

3.06 COLD AND HOT WEATHER CONCRETING

A Follow recommendations of ACI 305R when concreting during hot weather.

B Follow recommendations of ACI 306R when concreting during cold weather.

C Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

A Place concrete in accordance with ACI 304R.

B Do not place concrete when base surface is wet.

C Concrete can be placed using the slip form technique. If slip forming is used, fiber-reinforced concrete shall be used.

D Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

E Place concrete continuously over the full length of the run and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

F Place expansion joints at the beginning and ending of each pour.

G Place expansion joints at the beginning and ending of each pour. Place control joints concrete to indicated pattern.

3.08 JOINTS

A Align curb, gutter, and sidewalk joints.

B Place 3/8 inch wide expansion joints at 40 foot intervals and to separate curb from adjacent sidewalks, vertical surfaces and other components .

1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
2. Secure to resist movement by wet concrete.

C Provide sawcut contraction control joints every 8-feet. Where the curb is adjacent to a sidewalk, install contraction joints that align with the sidewalk joints with spacing between 8-feet and 10-feet.

D Provide tooled contraction joints between curbs/gutters and adjacent traffic duty pavements.

E At 90-degree curb corners, the contraction joint is to be cut parallel to the traffic lane. Diagonal cuts at 90-degree corners are not acceptable.

3.09 FINISHING

A Curbs: Uniform float finish and round edges. Correct all honeycombed areas by filling with mortar. Do not plaster. Finish the top and face while the concrete is plastic by wetting and rubbing with a carborundum brick. Finish the face of header curbs to 4-inches below the finished ground line. Provide uniform texture and color.

B Remove "slop" created by the concrete finishing from all joints and edges.

C Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

D Exposed macro fibers are to be removed using a propane torch and stiff brush after a minimum of 56-days curing of the concrete . Care should be taken to not overheat the concrete and cause it to be discolored, damaged or lose strength.

3.10 JOINT SEALING

A All expansion joints are to be sealed. See Section 321373 for joint sealer requirements.

3.11 TOLERANCES

A Maximum Variation of Surface Flatness and Face Alignment: 1/4 inch in 10 ft.

B Maximum Variation From True Position: 1/4 inch.

3.12 FIELD QUALITY CONTROL

A Allow an independent testing agency to perform field quality control tests, as specified in Division 1.

1. Provide free access to concrete operations at project site and cooperate with appointed firm.
2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
3. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

B Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure four concrete test cylinders. Obtain test samples for every 25 cu yd or less of each class of concrete placed.

1. Test fiber reinforced concrete prior to the addition of fiber and again after fiber has been added to set the baseline for the fiber reinforced compressive strength, slump and air content. This is to be done for the first pour of each mix design, and the results used for later pour strength requirements.
2. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3. Perform one slump test and one air content test for each set of test cylinders taken.

C Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken. All test reports are to by typed.

D Any tests or time limits that do not meet the specified requirements are to be reported to the Contractor and that concrete shall be considered unacceptable.

3.13 PROTECTION

A Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B Do not permit pedestrian traffic into curb/gutter area for 2 days minimum after finishing.

C Do not permit vehicular traffic into curb/gutter area until 75 percent design strength of concrete has been achieved.

D All concrete curb/gutter that is soiled or otherwise dirty are to be pressure washed and rinsed upon completion of the construction and landscaping work.

END OF SECTION

SECTION 321823.29 - ARTIFICIAL TURF

PART 1 - GENERAL

1.01 SECTION INCLUDES

A Synthetic Turf System includes, but is not limited to, the following:
1. Infill Type Competition Game Field Turf System consisting of both polyethylene monofilament fiber and polyethylene slit film fiber (full height), specifically designed, manufactured, and installed for the intended sport of football and soccer.
   a. The extent of synthetic turf work is shown on the drawings.
2. Infill System
3. Shockpad/Underlayment Pad System
4. Vertical draining base materials
5. Grooming, Maintenance and Annual Deep Cleaning
6. G-Max and Performance Testing

B The synthetic turf, and drainge base and pipe work is to be directly supervised in the field by an ASBA Certified Field Builder (CFB).

1.02 RELATED REQUIREMENTS

A Section 116833.23 - Athletic Equipment - Field
B Section 321613 - Concrete Curbs and Gutters
C Section 334600- Subdrainage

1.03 REFERENCE STANDARDS

A ASTM D 5823 - Standard Test Method for Pile Height of Yarn
B ASTM D 5848 - Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Coverings (pile weight, primary and secondary backing, and total weight)
C ASTM D 5739 - Standard Test Method for Stitch Gauge
D ASTM D 1335 - Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
E ASTM F 2765-09 - Standard Specification for Total Lead Content in Synthetic Turf Fibers
F ASTM F1015-03(2009) - Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces
G ASTM F 2898-11 - Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-confined Area Flood Test Method
H EN 12616 - European Standards for Water permeability
I ASTM F355a - Standard Test Method for Shock-Absorbing Properties of Playing Surface systems and Materials
J ASTM F 1936-10 - Standard Specification for Impact Attenuation of Turf Playing Systems as Measured in the Field (g-Max)
K ASTM F 3189-17 - Standard Test Method for Measuring Force Reduction, Vertical Deformation, and Energy Restitution of Synthetic Turf Systems Using the Advanced Artificial Athlete
L EN 1969 - Surfaces for Sports Areas, Determination of Thickness of Synthetic Sports Surfaces, Infill Depth
M EN 12616 - European Standards for Planarity

1.04 DEFINITIONS

A Synthetic Turf Manufacturer: company that makes and brands the synthetic turf carpet used for the project including any inlays and logos.
B Synthetic Turf Contractor: company responsible for the construction of the synthetic turf system including the base preparation, subdrainage system, drainage base and fabric, leveling stone, shock pad/underlayment pad, synthetic turf carpet and infill and inlays (including control and supervision of the

Synthetic Turf Installer), and field/turf amenities including but not limited to goals posts, bases, plates, pitching rubbers, and field utility boxes within the Synthetic Turf area.

C Synthetic Turf Installer - group responsible for the installation of the synthetic turf carpet, pad, infill and all inlays and logos.

1.05 SUBMITTALS

A Submit the following within 48 hours of bid opening:

1. Certificate for Certified Field Builder (CFB) proposed for the project.
2. One (1) copy of most recent installation/reference list for all projects of similar scope to this project completed in the last three years.
3. One (1) copy of the resume of proposed installation foreman. Installation crew must meet or exceed all requirements outlined in this Section.
4. One (1) copy of a manufacturers sample warranty.
5. A list from the turf manufacturer of all turf fiber and turf backing failures experienced and reported in the past 10 years regardless of whether the turf was replaced under warranty or not. The list is to include the name, location, phone number and other contact data of the Owner.

B Submit the following as part of the shop drawing process and prior to ordering materials:

1. One (1) copy of a manufacturers seam layout plan, striping plan and any details of construction which deviate from the plans and specifications.
2. Material Certificates: Three (3) copies for each material from material producer that will be used for this project. Each material certificate must be stamped and checked as approved by the Synthetic Turf Contractor before submittal to the Architect. Required material certificates include but are not limited to the following:
    a. A statement of origin, composition, and manufacturer of all aggregate materials to be used, including testing information supporting that the proposed aggregates meet or exceed these specifications.
    b. A statement of origin, composition, and manufacturer of all infill materials to be used, including testing information supporting that the proposed infill meets or exceeds these specifications.
    c. Supplier's material certification for aggregate.
    d. Suppliers material certification for concrete.
    e. Product data sheets on all drainage pipe, fittings, and geotextiles fabrics.
3. Provide a colored striping plan detailing lines, logos, numbers, letters and mowing pattern layout. Coordinate with Owner or Owner's Representative and Architect to get final approval of all designated colors, dimensions, mowing pattern, and logo/lettering designs.
4. Test reports for testing done within the past two (2) years verifying that the proposed turf meets the specifications for tuft binds, final tuft height, yarn size and thickness, face weight, total weight, and backing. If acceptable test data cannot be provided, then two (2) 24" x 24" samples of proposed synthetic turf carpet are to be provided and sent to an independent testing agency by the Contractor to be tested for tuft binds, final tuft height, yarn size and thickness, face weight, total weight and backing.
5. Three (3) color yarn samples, 10-feet long for each color used.
6. One (1) five (5) gallon bucket of each type of drainage stone.
7. One(1) two (2) gallon bucket of each type of infill material.
8. Two (2) 12" x 12" samples of non-woven filter fabric.
9. One (1) copy of product data and testing documents demonstrating that proposed product meets or exceeds all specified requirements.
10. Copies of independent laboratory test reports on system or components:
    a. ASTM D 792 Specific Gravity

b. ASTM D 1335 Tuft Bind
c. ASTM D 5034 Grab Breaking Strength
d. ASTM D 5793 Stitch Gauge
e. ASTM D 418 Pile Height
f. ASTM D 5848 Face, Backing (primary and secondary) and Total Weights
g. ASTM D 2859 Flammability (Pill test)
h. ASTM F 1551 Shoe Traction
i. ASTM F 1551 Water Permeability
j. ASTM F 1015 Abrasive Index
k. Lead Compliance testing showing that the turf and infill materials meet all applicable standards of the Consumer Product Safety Commission (CPSC) requirements.

C Submit the following after the materials have been delivered to the site:
1. Provide to the Architect materials samples of the following: one (1) gallon each of rubber or combination of rubber and sand infill material,
2. Eight (8) 24" x 24" samples of synthetic turf carpet cut from delivered rolls as selected by the Architect. These will be sent to an independent testing agency by the owner to be tested for tuft binds, final tuft height, yarn size and thickness, face weight and backing.
3. One (1) five (5) gallon bucket of each type of drainage stone.

D Prior to Final Acceptance of the finished product, the Synthetic Turf Contractor shall submit to the owner three (3) copies of their maintenance manuals. These manuals shall include all necessary instructions for the proper care and maintenance of the newly installed synthetic turf system.

1.06 QUALITY ASSURANCE

A The synthetic turf manufacturer shall meet the following criteria:
1. Operations:
a. The synthetic turf manufacturer is to provide proof that they have been in business under the same name for a minimum of five (5) years.
2. Experience:
a. The synthetic turf manufacturer must have a minimum of one (1) successful Power Five NCAA game or practice field installation and must provide documentation of such.
b. The synthetic turf manufacturer must be experienced in the manufacturing of this type of artificial turf system and provide project references of the synthetic grass system being installed at ten (10) similar exterior sites in the last three (3) years, a minimum of 60,000 square feet each.
c. A letter from the turf manufacturer must be provided stating that the installation crew and foreman are manufacturer certified must be submitted prior to the start of turf installation.

B The synthetic turf contractor shall meet the following criteria:
1. Operations:
a. The synthetic turf contractor is to provide proof that they have been in business under the same name for a minimum of ten (10) years.
b. The synthetic turf contractor must provide competent workmen skilled in this type of artificial turf installation. The designated Supervisory personnel on the project must be approved in writing by the turf manufacturer as competent in the installation of this material, including gluing and sewing seams and proper installation of the infill mixture. The synthetic turf manufacturer shall have a qualified inspector certify the installation and warranty compliance.
c. The synthetic turf installer must provide a qualified installation foreman to coordinate and review the component parts of the synthetic turf system. Submit a resume of experience for Architects approval prior to starting work.

d. The turf, pad, infill, drainage layer, subdrainage installation and all laser grading activities must be directly supervised by a American Sports Builders Association (ASBA) Certified Field Builder (CFB).

2. Experience:
   a. The synthetic turf contractor must specialize in athletic field projects and the associated drainage and fine grading to tight tolerances.
   b. The synthetic turf installer must provide factory-trained technicians skilled in the installation of athletic-caliber infilled synthetic turf systems to undertake the placement of the turf.
   c. The synthetic turf installation crew shall have installed a minimum of six (6) similar exterior rubber or rubber and sand filled synthetic turf systems of 60,000 square feet or greater in the past three (3) years.

C Warranties:
1. Turf Manufacturer's Warranty: this warrants the usability and playability of the artificial turf fiber and backing system for its intended uses for a minimum of an eight (8) year period commencing with the date of Substantial Completion. The warranty coverage shall not be prorated nor place limits on the amount of the fields usage, and should include, but not be limited to the following:
   a. Include unusual wear and damage caused from UV degradation as determined by tensile strength decreasing by 50% or more. The warranty shall specifically exclude vandalism and acts of God beyond the control of the manufacturer or installer.
   b. Assure the availability of exact or substantially the same replacement materials for the artificial turf installed for the full warranty period.
2. Contractor's Warranty: this warrants the field installation including, but not limited to the turf seams, infill, stone base, subdrainage, and subgrade, and is held by the General Contractor for the project. The warranty must have the following characteristics and cover all items:
   a. Provide full system coverage including any settlement, stone base migration, turf seams and edge attachment.
   b. Warrant materials and workmanship of the infill, drainage base, drainage piping system, and sub-base. If sub-base work and drainage base are installed by separate sub-contractors, the General Contractor shall still provide full warranty for all work as described in these documents.
   c. Warrant that the infill, drainage stone, piping and filter fabric materials installed meet or exceed the product specifications.
   d. Cover defects in the installation and workmanship. Assure the installation was done in accordance with both the manufacturer's recommendations and any written directives of the manufacturer's on-site representative.
   e. Shall be limited to repair or replacement of the affected areas, (unless the field fails to meet the required G-Max rating in which case a full field renovation or replacement will be required) at the option of the manufacturer, and shall include all necessary materials, labor, transportation costs, etc. to complete said repairs.
   f. The installed synthetic turf system's drainage capability shall allow water flow through the system at a rate of not less than ten (10) inches per hour upon completion of the installation, and not drop below eight (8) inches per hour for the duration of the warranty period.
   g. A copy of this warranty shall be provided to the Owner.
3. The Synthetic Turf Contractor may be required upon the request of the owner to provide a list of three clients that they have completed work for after the sale warranty.

D All designs, game markings, and layouts shall conform to all currently applicable National Federation State High School Association or KHSAA rules and regulations, or league specific requirements, depending on what applies.

E All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, shall withstand full climatic exposure in the location of the field, be resistant to insect infestation, rot, fungus and mildew; it shall also withstand ultra-violet rays and extreme heat, it shall allow the free flow of water horizontally to perimeter areas and vertically to the gravel blanket and into the field drainage system below the surface.

F The turf seams of all system components shall provide a permanent, tight, secure, and hazard free athletic playing surface. All inlaid markings (game lines, logos, etc.) shall remain in place throughout the duration of the full, 8 year warranty period.

PART 2 - PRODUCTS

2.01 ARTIFICAL TURF SYSTEM

A Infill Type Competition Game Field Turf System - Dual Fiber Monofilament and Slit Film Synthetic Grass:

1. Face Pile Weight:
   a. Football/Soccer/Lacrosse Areas: 46 oz/sy minimum.
2. Face Yarn Type: Yarns are to be manufactured in the United States or Europe. No Chinese yarns or yarns with lead are allowed:
   a. Football/Soccer Areas: Polyethylene parallel-long slit fiber and monofilament fiber.
3. Yarn Size/Ends:
   a. 7,500 - 10,000 denier (8 ends/1250 denier per end) minimum
4. Yarn Thickness: 100 microns (min) slit film, 300 microns (min) mono
5. Pile Height (Finished):
   a. Football/Soccer Areas: 2.0 inches (+/- 1/8")
6. Construction: Broadloom tufted
7. Tufting Gauge: 1/4" - 3/8"
8. Tuft Bind: 10 lbs (minimum)
9. Primary Backing: dimensionally stable 1-part (3 components) polypropylene, polyester and fiber backing, 6 oz/sy minimum, perforated for drainage
10. Secondary Backing: 20 oz/sy (minimum) urethane, full coverage of primary backing
11. Total Product Weight:
    a. Football/Soccer Areas: 77 oz/sy minimum
12. Finished Roll Width: 15 feet
13. Finished Roll Length: Up to 220 feet
14. Perforation (Outdoors): 3/16" holes on staggered 4" (approximate) centers
15. Permeability: 20" +/- per hour.
16. Average Abrasive Index (ASTM F1015): Less than 30.

B Field Colors:

1. Football/Soccer Field Areas:
   a. Competition Field Area: Two colors of Green yarn tufted at different ratios to establish a "mowed/rolled field" look, alternating every 5-yards.
   b. Non-Competition Areas: Single color of green
   c. Colors to be selected from manufacturers full line of color options.
2. Field markings: White
3. Striping:
   a. Football: White
   b. Soccer: Black

C Provide all game markings for KHSAA high school Football and Soccer as well as identified markings on the drawings. All school logo graphics and other related markings not identified to be factory tufted into the rolls shall be cut in and glued in accordance with manufacturer's recommendations.

D Football/Soccer/Lacrosse Resilient Shockpad/Underlayment: Shock pad system that when combined with the synthetic turf and infill system being installed will result in the full-system g-Max performance that meets the range required in these specifications. Shock pad system is to provide vertical infiltration rate of 50 in/hr (minimum), and a lateral drainage rate of 0.50 gpm/ft (minimum) on a 0.5% slope.
1. Schmitz Foam ProPlay 20D shockpad (basis of design)
2. Brock YSR
3. Other manufacturers of equal systems may be submitted for review and approval by Architect by addendum during the bidding phase.

E Resilient Infill Composition:
1. A resilient infill system, consisting of a specially formulated mixture of SBR crumb rubber and rounded or non-angular silica sand engineered to provide the look, feel, footing, and shock absorption of a natural grass field in ideal conditions.
   a. SBR Rubber. Granules shall contain minimal dust or contaminants and shall be derived from the ambient processing form of recycled passenger car tires (truck or equipment tires are not permitted). Color shall be substantially black.
      1) The clean, uniformly sized particles shall be consistent in shape and particle size distribution.
      2) The particles shall resist abrasion in high traffic and excessive wear applications and provide stability to synthetic sports turf applications.
      3) The particles shall be processed and sized under rigid specifications and manufacturers' statistical and quality control assurance program.
      4) Particles shall be structurally pure and consistently uniform in size distribution for predictable performance.
      5) The particles cannot be from another field or have been used for any other purpose, and must be "first use" from the tire recycling facility.
   b. Sand Particulate. The sand provided as a component of the infill mixture shall be rounded or non-angular so as to minimize abrasion to the athlete and synthetic grass fibers.

2.02 VERTICAL DRAINAGE BASE MATERIALS

A Excavation: Existing natural grass field shall be excavated to the depth required to establish the finished elevations designed by the architect and as shown on the excavation plan. The subgrade shall be shaped to achieve a minimum of 0.5% (one-half of one percent) slope from the center of the field to each sideline in order to mirror the grade of the finished synthetic turf surface. The sub grade shall also be compacted and proof rolled to a minimum of a 95% Proctor within 2% of optimum moisture.

B Geotextile Filter Fabric: Water pervious type, black non-woven, needle punched, polypropylene, 6oz minimum weight.

C Perforated Drainage Pipe Network: Minimum drainage pipe size shall be 4" diameter and minimum collector pipe size shall be 8" diameter unless indicated larger on the on the drawings. Refer to drawings for location and configuration of drainage pipes and collector pipes. Refer to Section 334600 Subdrainage.

D Stone Base Courses:
1. The free-draining base aggregate base layer shall consist of a consistent 4.5-inch (minimum) depth of open graded material. Base drainage aggregate used must achieve a minimum 95% standard Proctor within 2% optimum moisture. The open graded aggregate material shall conform to the following criteria:
   a. Base Aggregate:
   b. Grading Requirements for Base Aggregate - Open Graded Stone, Washed

Sieve Size	Percent Passing
2"	100

3/4"	92
3/8"	58
No. 4	25
No. 16	9.2

E Choker Stone Course:

1. The choker material (stone dust) shall be a 1.5-inch (minimum) layer of porous, free draining material, number 1 stone sand or similar material, that will provide a minimum 95% Proctor within 2% of optimum moisture.
   a. Choker Material:
   b. Grading Requirements for Choker Material - Porous Stone Sand

Sieve Size	Percent Passing
3/8"	100
No. 4	96.8
No. 8	72
No. 16	45
No. 30	25
No. 50	13
No. 100	5
No. 200	2

F Other Stone: The Contractor can submit an alternate stone gradation for the Base Stone and Choker Stone for review by the Architect if the Synthetic Turf Manufacturers recommended gradation requirements differ from that identified above as long as the full system warranty will apply.

2.03 OTHER MATERIALS

A Nailer boards are to be dimensional lumber made of recycled plastic (no wood fiber allowed) and suitable for direct bury. Acceptable materials include Markstaar Recycled Plastic Lumber (www.markstaar.com), and Menards Dimensional Plastic Lumber (www.menards.com).

B Adhesives for bonding tufted synthetic turf shall be heat activated so as to provide a "welded" seam or laminate, or moisture cured urethane based and designed specifically for the installation of synthetic turf systems. Seam tape is to be used for all glued or welded seams.

C Sewn seams: All long seams are to be sewn with high quality cord/thread as recommended by synthetic turf manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A Ensure that all work is coordinated with other trades.

B Verify that bedrock has been removed to a depth of 12-inches below the subgrade elevation for the synthetic turf field. Refer to Excavation Specification Section 312316 and Rock Removal Specification Section 312316.26 for additional information.

C Verify that shotrock material has been removed to a depth of 12-inches below the subgrade elevation for the synthetic turf field. Refer to Excavation Specification Section 312316 for additional information.

D Verify that the subgrade is dry and ready to support the construction loads, and that all gradients and elevations of the subgrade are correct.

E The subgrade is to be surveyed by a Licensed Land Surveyor to ensure that it is within a tolerance of 0.5-inches total (+/- 1/4") within a 25-foot grid. The surveyor is to provide a PDF and AutoCad drawing of the actual survey locations and elevations.

F Coordinate installation of the soccer goal post and ensure that it is properly aligned and leveled and at the correct height for the finished field surface.

3.02 JOB SITE CONDITIONS

A Synthetic Turf installation (or any of it's components) shall not occur if ambient air temperature is below 32 degrees F., materials are below 32 degrees F, rain is falling or pending and/or conditions exist or are pending, that will be unsuitable to the installation.

B Synthetic Turf Installation shall not occur if excessive rainy or wet conditions have occurred, which would adversely affect the application and cure of any adhesives.

3.03 PRE-INSTALLATION CONFERENCES

A Subgrade Pre-Installation Conference
1. Occurs after subgrade is prepared and surveyed.
2. The Architect and Owner will review the subgrade and survey.
3. Construction procedures will be reviewed with the Contractor of the perimeter curb, subdrainage, geotextile fabric, and stone base.

B Artificial Turf Pre-Installation Conference.
1. Occurs after stone choker course is installed and surveyed.
2. The Architect and Owner will review the choker stone course and survey.
3. Construction procedures will be reviewed with the Contractor of the artificial turf and infill material.

3.04 INSTALLATION

A Field layout shall be as shown on the approved shop drawings.

B The Synthetic Turf Contractor and Installer shall strictly adhere to the installation procedures outlined under this section. Any variance from these requirements must be accepted in writing, by the manufacturer's on-site representative, and submitted to the Architect/Owner, verifying that the changes do not in any way affect the warranty.

3.05 PERIMETER CURB

A Concrete header curb: The synthetic turf perimeter fastening structure shall be installed before the drainage aggregate in areas identified to receive new curb.
1. The concrete header curb shall be installed in accordance with the Drawings and/or Shop Drawings and these Specifications. The foundation of the concrete header curb shall be a compacted free-draining aggregate. Future water entering the foundation shall have a free-draining path directly to the perimeter collector pipe.

3.06 VERTICALLY DRAINING BASE

A Trenching: All piping shall be as specified and connected by manufacturer's couplers, plugs etc.
1. The base grade shall be shaped to mirror the finished grade, or be steeper and have additional drainage stone installed, and approved by the Architect and/or Owner's Representative. The Contractor shall begin layout and trenching for the drainage network as indicated on the drainage plan and all details that apply. Trenching progress shall work upward in elevation to allow for immediate discharge of water from the entire field in the event of a rainfall.
2. No trenches, with or without pipe, shall be permitted, to remain unfilled overnight and/or while crews are not progressively working on site.
3. All perimeter trenches must be dug in accordance with the field drainage plan details.
4. Traffic plates are to be used for crossing over any trenches that have pipe installed but have not had the stone drainage blanket installed.

B Install geotextile fabric over excavated, graded and prepared sub-grade. Provide a 12" minimum overlap at all long seams, shingled in the direction of water flow, and 18" minimum overlap at roll ends. Fabric shall first be installed in the drainage trenches prior to installation of perimeter collector lines. After backfilling of all trenches is complete, the entire field shall be covered with fabric prior to the base aggregate application.

C Drainage Pipe Installation and Backfilling
1. Collector lines shall be connected to discharge outlet at the onset of operations.
2. Collector lines shall be installed before lateral lines and shall begin with the deepest elevations.
3. After all collector and lateral lines have been installed, the Contractor shall repair any sub grade undulations prior to installing geotextile fabric.

D Base Drainage Aggregate: The installation of the base drainage aggregate shall only begin after the drainage pipe installation has been inspected and approved by Owner's Representative. Installation of the Free-Draining Base Aggregate shall follow procedures that protect the base grade soils and
1. The base grade subsoil shall be dry before undertaking the placement of base aggregate.
2. Delivery trucks shall enter the field only from the designated entrance point. Base course stone shall be dumped closest to the entrance first and continuously worked towards the furthest point of the field. Extreme care must be taken not to disturb sub grade or drainage network.
3. Low earth pressure track-type dozers shall push out the stone from behind the pile onto and toward the field center. Dozers shall only traffic the aggregate they are spreading.
4. Bulldozer blades shall be equipped with a laser-guided hydraulic system. Care shall be taken not to disturb or contact the base grade soils with the dozer blades or tracks. All equipment trafficking over the drainage aggregate shall ensure there is a minimum depth of 4" of aggregate between the geotextile fabric and the dozer track ground contact position.
5. When the aggregate spreading is completed, the surface shall be further firmed by a 5-ton roller. Static vibration shall not be part of this process.
6. The stone shall be left firm, but not over-compacted as to protect the porosity and drainage capabilities of the aggregate profile.
7. After the drainage stone has been uniformly spread throughout the surface, the surface shall receive a final laser finished grade. This process shall be accomplished using a turf-type tractor, or lightweight grader, equipped with high flotation tires and a hydraulically controlled laser blade capable of the required tolerance.
8. The free-draining base course must be installed to a depth of 4.5 inches and shall be independently tested for an overall compaction rate of 95% of Proctor at a moisture content within 2% of optimum in accordance with ASTM D1557.

E Choker Levels: The base drainage stone final elevations shall mirror the proposed choker layer final grade material. Care shall be taken not to allow the coarser aggregate to surface into the profile or finished grade of the choker layer.
1. The choker layer shall be applied using high flotation grading equipment. The choker material shall be evenly spread throughout the proposed field surface to the final pre-pad or pre-turf elevations.
2. After the choker material has been uniformly spread throughout the surface by the described method, the surface shall receive a final laser finish grade. This process shall be accomplished using a turf-type tractor, or lightweight grader, equipped with high flotation tires and a hydraulically controlled laser blade capable of meeting the required tolerance.
3. Care shall be taken throughout the installation not to force the choker material into the porosity of the base aggregate below.
4. Final choker layer of stone must be laser graded to a tolerance of +/- ¼" from the required elevation based on a 25-foot grid with a maximum deviation of no more than ¼". The laser grading equipment is to be turf tired with automatic laser guiding. The Contractor is to have a licensed land surveyor perform a topographical survey of the finished choker surface on a 25-foot grid over the full synthetic surface area. The surveyor is to provide a stamped and signed certification drawing to the Architect to ensure that the above requirements are met."
5. Final layer of stone must be installed at a depth of 1.5 inches. Finished aggregate base must be proof rolled by means of 2 to 5 ton roller. The finished aggregate base must achieve an overall

compaction rate of 95% Proctor at a moisture content within 2% of optimum in accordance with ASTM D1557. It shall also be flush with top of the turf nailer board.

F Base Acceptance: The Architect and/or Owner's Representative must jointly approve the base before turf installation can begin.

3.07 FOOTBALL/SOCCER SHOCKPAD / UNDERLAYMENT PAD

A Shockpad installation is not to begin until the conformance survey of the stone base has been completed and approved by the Architect.

B The shock pad is to be installed per the manufacturers requirements and square to the center field line.

C The panels shall be installed in full pieces with only the outer edge pieces being cut.

D Care is to be taken to not divot or disturb the stone base. If footprints or other disturbances occur, the material is to be re-leveled and compacted to meet the contract documents and to provide stable support or the shock pad and turf system.

3.08 SYNTHETIC TURF AND INFILL

A Synthetic Turf and Infill Materials

1. After a final inspection of the drainage base by the Contractor and the Owner's Representative, the synthetic turf installation shall begin. The first roll shall begin with the longest perpendicular cross-field distance. No head seams shall be permitted in the inbound playing surface.
2. The rolls of turf shall be rolled out a minimum of one hour prior to starting seaming procedures and allowed to relax/expand.
    a. All visible wrinkles shall be stretched out before seaming.
    b. Seams shall be flat, tight and permanent with no separation or fraying.
    c. Synthetic turf yarn fabric that is trapped between seams shall be freed from the seams by hand or other approved method to an upright position prior to the commencement of brushing and top dressing procedures.
    d. All synthetic turf seams shall be assembled as follows: The full width rolls shall be laid out across the field. Utilizing standard state of the art sewing and welding/gluing procedures, each roll shall be attached to the next.
    e. When all of the rolls of the playing surface have been installed, the sideline areas shall be installed perpendicular to the playing field in the same method as above.
3. Tufted and Inlaid Lines
    a. Layout and descriptions of tufted, inlaid and/or painted lines shall be as indicated on final shop drawings.
    b. Inlaid lines and field markings shall be cut in using heat welded or urethane adhesive seaming methods recommended by the Synthetic Turf Contractor.

B Infill Materials: After all seaming is completed and inlaid lines, logos and lettering have been installed and the adhesive cured; the infill materials shall be spread evenly, using a drop spreader or top dresser.

1. For Competition Field Turf Areas, a mixture of crumb rubber and sand shall be applied in a uniform rate of 8lbs/s.f. and to a depth resulting in no more than 1/2-inch of turf fiber being exposed above the top of the infill. The crumb rubber and sand shall be applied at a uniform rate in multiple applications until the specified infill depth is achieved. Infill ratios (by weight) shall be as follows:
    a. Football/Soccer areas: 70 percent sand, 30 percent rubber.
2. Infill material shall be brushed between infill applications with a motorized rotary broom and pull-type groomer brush simultaneously.
3. After the infill has been installed and the field groomed, the field is to be watered at a rate equivalent to 1-inch of rain.

4. After the infill has been completed and the field watered for settlement, the infield depth is to be checked to ensure that the infill depth is at least 75% of the pile height. If infill is shown to be low, additional infill is to be installed per the required ratio until the required depth is reached.

3.09 PERIMETER ATTACHMENT

A After final trimming of the turf, the turf shall be screwed into the nailer board system as per the turf manufacturers recommendations, or as follows:
1. Where concrete curbs, slabs or walls are present, install a 2" x 4" nailer board to the slab/wall/curb so that the top of the turf infill will be flush with the top of the concrete curb or at the designed elevation, by means of concrete screws, such as Tapcon, set every 12 inches. This shall be the responsibility of the Synthetic Turf Contractor. See synthetic turf edge attachment detail on the drawings.
2. Attached edge of turf to nailer boards using 1" (minimum) length, stainless or epoxy coated screws as recommended by the manufacturer. Install screws on 12" centers along runs, and at 6" centers at all corners for a distance of 30 inches.

3.10 TURF CLEANING

A Upon completion of the turf installation and prior to testing and punch by the designer, the following are to be performed by the turf installer:
1. All inlaid areas are to be inspected for excess adhesive and trapped fibers, and all excess adhesive removed and trapped fibers released.
2. The entire turf area is to be checked for installation pins/spikes using a metal detector to ensure that all pins/spikes have been removed.
3. All loose fibers are to be removed from the field and the field groomed.

3.11 TESTING

A Construction Testing
1. The Owners testing agency will perform gradation testing on random samples of the drainage and choker courses of stone to confirm compliance with the documents.
2. The Owners testing agency will observe and confirm the proper installation of the subdrainage system, backfill, filter fabric and other materials. If at any time the testing agency observes improper materials or techniques, the Contractor is to cease the work and remediate any items necessary to meet the project requirements.
3. Random samples of the turf materials delivered to the site will be sampled and sent to a testing laboratory for compliance testing. Any materials that do not meet the requirements of the specifications or the manufacturers stated properties shall be removed and replaced with materials that conform to the specifications.

B G-MAX Testing
1. The Contractor is to hire an independent testing laboratory to perform a G-Max test (ASTM-F355A, F1936 methods) to verify that the shock attenuation properties of the field meet the requirements set forth in this specification. The Contractor is to coordinate the schedule for the testing and provide the testing agency necessary access. Each set of tests are to include a minimum of twelve (12) test locations across each field.
2. At the time of substantial completion, the average G-Max rating must be between 110 and 135 for the system. The average G-Max must not exceed 150 for the system at any time during the life of the warranty. The Owner reserves the right to have the field tested for shock attenuation at its own cost at anytime it deems necessary. If at anytime during the 8 year warranty period the G-Max ranges reach unacceptable levels, it is the responsibility of the turf contractor to bring the field back into the required ranges at no cost to the Owner.

C Infiltration Testing

1. The Owners independent testing laboratory will perform a minimum of four (4) field infiltration tests with at least one located in each quadrant of the field both during and after construction as follows:
    a. Test permeability of the stone choker and drainage blanket upon completion of the final grading of the choker course and immediately before installation of the turf. The testing to be performed is ASTM F2898-11, Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-confined Area Flood Test Method. Minimum water permeability rate must exceed twenty (20) inches per hour.
    b. Confirm the permeability of the infill and turf per ASTM D3385, Standard Test Method for Infiltration Rate of Soils in Field using the double-ring infiltrometer. Minimum water permeability rate must exceed twenty (20) inches per hour.

D Performance Testing
1. The Owner will pay to have an independent testing laboratory as approved by the Architect perform the following testing:
    a. prEN16717:2014, ASTM 3189 Shock Absorption
    b. prEN16717:2014, ASTM 3189 Vertical Deformation
    c. prEN16717:2014 Energy Restitution
    d. EN15301:2007 Rotational Resistance

3.12 ANNUAL TESTING AND MAINTENANCE

A The Synthetic Turf Contractor shall provide a total of eight (8) deep cleanings and groomings to be scheduled on an annual basis over the 8 year warranty life. The exact dates of the deep cleaning and grooming shall be coordinated with the Owner; it is anticipated that the services would be scheduled before the first home game of each year.

B The Synthetic Turf Contractor shall provide a total of eight (8) G-MAX testing (ASTM-F355A, F1936 method) trips to be scheduled on an annual basis over the 8 year warranty life. The exact date of the G-MAX testing shall be coordinated with the Owner it is anticipated that the services would be scheduled before the first home game in the spring of each year. Each testing trip will include G-MAX testing at a minimum of 12 locations.

3.13 CLOSEOUT

A The Synthetic Turf Contractor must verify that a qualified representative has inspected the installation and that the finished field surface conforms to the manufacturer's requirements.

B The Synthetic Turf Contractor must submit three (3) copies of its maintenance manual to the Owner.

C Demonstration and Owner Training Session
1. Synthetic Turf Contractor must train Owner's designated field personnel in proper grooming and care procedures. This includes training field personnel on how to properly use grooming equipment as well as cleaning and making minor repairs if acceptable with the warranty. All training is to be video taped for later use.
2. Synthetic Turf Contractor shall include training for infill additions, gum removal, seed removal, and normal trash/sweeper equipment operation.
3. Synthetic Turf Contractor shall provide to the Owner in written format a sample of a typical maintenance log to be kept by the Owner.
4. All testing and training shall be completed by the contractor with the Owner prior to substantial completion of the project.

D Extra Materials:
1. Provide to the Owner one (1) super sack each of rubber granules and sand. One super sack of each material is to be stored at each field.
2. All salvageable pieces of turf that are or wider (up to one full roll length of each color used) should be left with the Owner.

3.14 CLEAN UP

A Contractor shall provide the labor, supplies and equipment as necessary for final cleaning of surfaces and installed items.

B During the contract and at intervals as directed by the Architect and as synthetic turf installation is completed, clear the site of all extraneous materials, rubbish, or debris and leave the site in a clean, safe, well draining, neat condition.

C Surfaces, recesses, enclosures, etc. shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

END OF SECTION

SECTION 329219 - SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A Preparation of subsoil.
B Placing topsoil.
C Hydroseeding, mulching and fertilizer.
D Maintenance.

1.02 RELATED REQUIREMENTS

A Section 015713- Temporary Erosion and Sediment Control
B Section 312200 - Grading: Topsoil material.
C Section 31 2200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
D Section 312323 - Fill: Topsoil material.
E Section 312513 - Permanent Erosion Controls:

1.03 DEFINITIONS

A Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 SUBMITTALS

A Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer ; and watering instructions.
B Hydroseed product and maintenance data including a hydroseed physical sample. Submit dry hydroseed material in one gallon bag.

1.05 REGULATORY REQUIREMENTS

A Comply with regulatory agencies for fertilizer and herbicide composition.

1.06 DELIVERY, STORAGE, AND HANDLING

A Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
B Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.01 SEED MIXTURE

A Seed Mixture:
1. Tall Fescue Grass Type: 40 percent. (Firecracker LS, Aggressor, Falcon IV, Col-M, 3rd Millenium or similar to be approved by the Landscape Architect).
2. Fine Fescue Grass Type: 30 percent. (Reliant IV, Firefly, Epic, Fortitude, Finelawn Petite or similar to be approved by the Landscape Architect)
3. Kentucky Blue Grass Type: 20 percent. (Freedom III, Blue Velvet, Midnight, Barrister, Nu Destiny, Quantum Lelap, Brilliant, Everglade or similar to be approved by the Landscape Architect).
4. Perennial Rye: 10 percent.
   a. Approved Varieties:
      1) Manhattan 5
      2) Divine

3) Secretariat II

2.02 SOIL MATERIALS

A Topsoil: Type as specified in Section 312200.

2.03 ACCESSORIES

A Hydraulic Mulch: Fully biodegradable hydraulic mulch composed of 100% recycled wood fibers, cellulose fibers and wetting agents (including high-viscosity colloidal polysaccharides). The hydraulic mulch is to be sanitized, free from plastic netting, and upon application forms an intimate bond with the soil subsurface to create a porous, absorbent and flexible erosion resistant blanket that allows for rapid germination and accelerated plant growth.

1. Basis of design: SoilCover Blend with Tack by Profile Products, 750 Lake Cook Road, Suite 440, Buffalo Grove, IL 60089. p:800-508-8681, www.profileproducts.com.

B Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: Recommendations per the soil test.

C Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

2.04 TESTS

A Analyze to ascertain percentage of nitrogen, phosphorus, potash, percentage inorganic matter soluble salt content, organic matter content, and pH value.

B Submit minimum 10 oz sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.

C Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify that prepared soil base is ready to receive the work of this Section.

B For areas that are graded with slopes less than 6:1, hydroseeding may be used in lieu of seed and mulch.

3.02 PREPARATION

A Prepare subgrade in accordance with Section 312200.

B Place topsoil in accordance with Section 312200.

3.03 FERTILIZING

A Apply fertilizer as recommended in the soil testing results.

B Apply after smooth raking of topsoil and prior to roller compaction.

C Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D Mix thoroughly into upper 3 inches of topsoil.

E Lightly water to aid the dissipation of fertilizer.

3.04 HYDROSEEDING

A Apply seed at a rate of 7 lbs per 1000 sq ft or as recommended by the seed producer and/or soil testing, evenly in two directions. Rake in lightly.

B Do not seed areas in excess of that which can be mulched on same day.

C Apply 2000 lbs of hydraulic mulch with tack per acre or as recommended by the hydroseed manufacturer. Maintain clear of shrubs and trees. Contractor is to submit bill of materials to architect for quantity of materials delivered to site. Contractor is to have a manufacturer representative present on site during the first day of installation of hydraulic mulch.

D Contractor is to water hydroseeded area once every 7-days after hydroseeding for that area is complete or as recommended by the manufacturer.

E Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.05 PROTECTION

A Identify seeded areas with stakes and string around area periphery. Set string height to 18 inches. Space stakes at 30 inches.

B Protect seeded areas in accordance with Section 312513 - Permanent Erosion Controls

3.06 MAINTENANCE

A Provide maintenance at no extra cost to Owner; Owner will pay for water.

B See Division 1 Sections for additional requirements relating to maintenance service.

C Provide maintenance of seeded areas for three months from Date of Substantial Completion.

D Mow grass at regular intervals to maintain at a maximum height of 4 inches. Do not cut more than 1/3 of grass blade at any one mowing.

E Neatly trim edges and hand clip where necessary.

F Immediately remove clippings after mowing and trimming.

G Water to prevent grass and soil from drying out.

H Roll surface to remove minor depressions or irregularities.

I Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

J Immediately reseed areas that show bare spots.

K Protect seeded areas with warning signs during maintenance period.

END OF SECTION

SECTION 334100 - SUBDRAINAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A Filter aggregate and fabric and bedding.
B Synthetic turf athletic field subdrainage systems.
C French Drainage Systems

1.02 RELATED REQUIREMENTS

A Section 312316 - Excavation: Excavating for subdrainage system piping and surrounding filter aggregate.
B Section 312316.13 - Trenching: Excavating and backfilling for site subdrainage systems.
C Section 312323 - Fill: Backfilling over filter aggregate, up to subgrade elevation.

1.03 REFERENCE STANDARDS

A ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.
B AASHTO M 252M AND M 294M - Corrugated PE Drainage Pipe and Fittings.

1.04 SUBMITTALS

A See Section 013000 - Administrative Requirements, for submittal procedures.
B Shop Drawings: Indicate dimensions, layout of piping, high and low points of pipe inverts, gradient of slope between corners and intersections, and connections to the storm water system.
C Product Data: Provide data on pipe drainage products, pipe accessories, and filter fabric.
D Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
E Project Record Documents: Record location of pipe runs, connections, cleanouts and principal invert elevations.

PART 2 PRODUCTS

2.01 PIPE MATERIALS

A Dual Walled Corrugated Plastic Pipe: Rigid type; 4 inch minimum diameter or as shown on the drawings, 10-foot or 20-foot lengths, with required fittings.
1. Refer to Specifition Section 334101 for approved manufacturer's.
B Use perforated pipe at subdrainage system; unperforated through sleeved walls.

2.02 AGGREGATE AND BEDDING

A Filter Aggregate and Bedding Material: Granular fill as specified in Section 312323.

2.03 ACCESSORIES

A Filter Fabric: Water pervious type, black non-woven polypropylene 6oz minimum weight.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A Hand trim excavations to required elevations. Correct over-excavation with pipe bedding.
B Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

3.03 INSTALLATION

A Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.
B Place filter fabric on clean cut subsoil or top of footing as indicated. Filter fabric shall be installed as to completely separate draining aggregate materials from adjacent soil materials.

C Place drainage pipe on filter fabric.

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

E Place aggregate in maximum 4 inch lifts, consolidating each lift.

F Refer to Section 312323 for compaction requirements. Do not displace or damage pipe when compacting.

G Wrap filter fabric over levelled top surface of aggregate cover with minimum of 12-inches of overlap prior to subsequent backfilling operations. In cases where retaining wall waterproofing are required, lap the loosened section of drainage panel filter fabric over the filter aggregate fabric.

H Connect to storm sewer system with unperforated pipe , through installed sleeves.

3.04 FIELD QUALITY CONTROL

A See Division 1 Sections for general requirements for testing and inspections.

B Request inspection prior to and immediately after placing aggregate cover over pipe.

3.05 PROTECTION

A Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION

SECTION 334101 - SITE STORM DRAINAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A Storm drainage piping, fittings, and accessories.

1.02 RELATED REQUIREMENTS

A Section 312316.13 - Trenching: Excavating, bedding, and backfilling.
B Section 334413.13 - Catch Basin and Curb Inlets
C Section 334903 - Storm Drainage Inlets and Outlets
D Section 334913 - Storm Drainage Manholes

1.03 DEFINITIONS

A Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.04 REFERENCE STANDARDS

A AASHTO M 252M AND M 294M - Standard Specification for Corrugated Polyethylene (PE) Drainage Pipe.
B ASTM F 667 - Standard Specification for Large Diameter Corrugated Polyethylene (PE) Pipe and Fittings.
C ASTM F 447 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
D ASTM D 3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

1.05 SUBMITTALS

A Division 01 - Comply with all related requirements.
B Product Data: Provide data indicating pipe, pipe accessories,and fittings.
C Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
D Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
E Project Record Documents:
1. Record location of pipe runs, connections, catch basins, cleanouts, and invert elevations.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

A Corrugated PE Drainage Pipe and Fittings: Type S, dual wall with smooth waterway for coupling joints and PE sleeve with gasket material that mates with pipe and fittings to make them watertight. Approved manufacturers are:
1. Advanced Drainage Systems, Inc., N-12 Pipe (www.ads-pipe.com)
2. Timewell, Dual Wall Pipe(www.timewelltile.com)
3. Baughman Tile Company, Dual Wall Pipe (www.baughmantile.com)
4. Hancor, Blue Seal Pipe (www.hancor.com)
5. Prinsco, Goldflow WT (www.prinsco.com)
6. J.M. Eagle- product Eagle Corr Dual Wall Watertight Pipe. (www.jmeagled.com)
7. Substitutions: As submitted for review and approved by architect by addendum during the bidding process.

2.02 PIPE ACCESSORIES

A Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required wye, bends, elbows, cleanouts, reducers, traps and other configurations required.
B Trace Tape: Magnetic detectable conductor, clear plastic covering, imprinted with "Storm Sewer Service " in large letters.

2.03 BEDDING AND COVER MATERIALS

A Bedding: As specified in Section 312316.13.

B Cover: As specified in Section 312316.13.

PART 3 EXECUTION

3.01 TRENCHING

A See Section 312316.13 for additional requirements.

B Hand trim excavation for accurate placement of pipe to elevations indicated.

C Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

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

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

C Connect to building storm drainage system, foundation drainage system, and utility/municipal sewer system.

D Install continuous trace wire 6 to 12 inches below finish grade, above pipe line; coordinate with Section 312316.13.

3.03 FIELD QUALITY CONTROL

A See Division 1 Sections for general requirements for testing and inspections.

B Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

C Alignment: Piping where less than the full diameter of the inside of the pipe is not visible between structures will require replacement.

D Deflection Test: Piping with deflection that prevents passage of a ball or cylinder of size not less than 92.5 percent of piping diameter will require replacement.

E Piping that is crushed, cracked, broken or otherwise damaged will require repair or replacement as determined by the Architect.

F The contractor is to provide someone to remove and replace all grates or covers on storm water structures for any punch list visits that involve the storm water system.

3.04 PROTECTION

A Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

SECTION 334413.13 - CATCH BASINS AND CURB INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A Catch basins.
B Precast concrete catch basins with grates, frames and accessories .
C Monolithic FRP catch basins and inlets, frames, covers, anchorage, and accessories.

1.02 RELATED REQUIREMENTS

A Section 015713 - Temporary Erosion and Sediment Controls for temporary inlet protection
B Section 334100 - Subdrainage
C Section 334101 - Site Storm Drainage Piping

1.03 REFERENCE STANDARDS

A ASTM A 48/A 48M - Standard Specification for Gray Iron Castings; 2003.
B ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
C ASTM C 913 - Standard Specification for Precast Reinforced Concrete Water Structures; 2008.
D ASTM C 478 - Standard Specification for Precast Reinforced Concrete Manhole Sections; 2007.
E ASTM C 923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals; 2007.
F ASTM C 923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals [Metric]; 2007.
G ASTM D 3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells; 2005.
H ASTM D3753 - 05e1 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells

1.04 SUBMITTALS

A Division 01 - Comply with all related requirements.
B Shop Drawings: Indicate structure identification designations, locations, elevations, piping sizes and elevations of penetrations.
C Product Data: Provide structure data including configuration, grates, frames, steps and other components .

1.05 QUALITY ASSURANCE

A Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

A Pre-Cast Structure Sections: Reinforced precast concrete in accordance with ASTM C 478 (ASTM C 478M), with resilient connectors complying with ASTM C 923 (ASTM C 923M).
B Polyester Structure Sections: ASTM D 3753, glass-fiber reinforced polyester .
C Approved Pre-Cast Concrete Manufacturers include:
   1. Oldcastle Precast
   2. Forterra (formerly Sherman-Dixie)
   3. Substitutions: As submitted for review and approved by architect by addendum during the bidding process.
D Approved Polyester Structure Manufacturers include:
   1. Advanced Drainage Systems (ADS)
   2. HARCO

3. Substitutions: As submitted for review and approved by architect by addendum during the bidding process.

2.02 CATCH BASIN AND CURB INLET COMPONENTS

A Concrete Structure Inlets:
1. Catch Basin:
   a. Grate Design: Per the storm drainage structure schedule on the drawings.

B Polyester Structure Inlets:
1. Area Drains (Landscaped Areas):
   a. Grate Design: Per the storm drainage structure schedule on the drawings. All grates must meet or exceed H-20 loading.
   b. Approved Manufacturers include:
      1) Harco PVC Drain Basins and In-Line Drains
      2) ADS Nyloplast Drain Basins and In-Line Drains
      3) Substitutions: As submitted for review and approved by architect by addendum during the bidding process.

2.03 OTHER COMPONENTS

A Grate and Frame: ASTM A 48/A 48M, Class 30B Cast iron construction, machined flat bearing surface, removable lockable grate, designed for H-20 loading; Frames in pavement areas to allow for full asphalt pavement section to be located above the top of the concrete structure. Frames in landscape areas to be a minimum of 6-inches tall to allow for topsoil cover over top of concrete structure. Approved manufacturers include:
1. J.R. Hoe and Sons
2. Neenah Foundry Co.
3. Substitutions: As submitted for review and approved by architect by addendum during the bidding process.

B Inlet Structure Steps: Formed Poly-Coated Steel rungs; 3/4 inch diameter. Formed integral with structure sections.

2.04 CONFIGURATION

A Shape: As identified in the storm structure schedule on the drawings.
B Clear Inside Dimensions: as required for piping layout shown with 48 inch minimum diameter for circular structures.
C Design Depth: As indicated.
D Clear Lid Opening: 24 inches diameter.
E Pipe Entry: Provide openings as required.
F Steps: 12 inches wide, 16 inches on center vertically, set into structure wall. Steps are required for all concrete structures that are 42-inches deep or deeper from grate elevation to the bottom of the structure.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify items provided by other sections of Work are properly sized and located.
B Verify that built-in items are in proper location, and ready for roughing into Work.
C Verify excavation for structure is correct.

3.02 PREPARATION

A Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 INSTALLATION - CATCH BASINS

A Form bottom of excavation clean and smooth to correct elevation.
B Establish elevations and pipe inverts for inlets and outlets as indicated.

C Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.

D Mount grate and frame level in grout, secured to top slab to elevation indicated. Grate elevations shown on the drawings are for the highest point on the grate for combination inlets, and are the elevation where water will enter the structure for catch basins.

E All lift hook holes are to be grouted flush with the face of the structure using a hydraulic, non-shrink grout that will provide a finish to match that of the structure.

F Coordinate with other sections of work to provide correct size, shape, and location.

3.04 FIELD QUALITY CONTROL

A See Division 1 sections for field inspection and testing requirements.

B If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

C Structures and castings that are cracked, broken or otherwise damaged will require repair or replacement as determined by the Architect.

D The contractor is to provide someone to remove and replace all grates or covers on storm water structures for any punch list visits that involve the storm water system.

3.05 SCHEDULES

A Storm Sewer Structures: See contract drawings for the storm structure schedule.

END OF SECTION

SECTION 334903 - STORM DRAINAGE OUTLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A Precast concrete headwalls with grates and accessories .

1.02 REFERENCE STANDARDS

A ASTM A 48/A 48M - Standard Specification for Gray Iron Castings; 2003.
B ASTM C 478 - Standard Specification for Precast Reinforced Concrete Manhole Sections; 2007.
C ASTM C 478M - Standard Specification for Precast Reinforced Concrete Manhole Sections [Metric]; 2007.
D ASTM C 923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals; 2007.
E ASTM C 923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals [Metric]; 2007.

1.03 SUBMITTALS

A See Division 1 Sections for submittal procedures.
B Shop Drawings: Indicate structure identification designations, locations, elevations, piping sizes and elevations of penetrations.
C Product Data: Provide structure data including configuration, grates, frames, steps and other components .

1.04 QUALITY ASSURANCE

A Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

A Pre-Cast Headwalls: Reinforced precast concrete in accordance with Kentucky Transportation Cabinet requirements.
B All headwalls are to be in compliance with Kentucky Transportation Cabinet requirements.
C Approved Pre-Cast Concrete Manufacturers include:
1. Oldcastle Precast
2. Sherman-Dixie
3. Substitutions: As submitted for review and approved by architect by addendum during the bidding process.

2.02 HEADWALL COMPONENTS

A Grates: Rectangular steel bars, hot-dipped galvanized per Kentucky Transportation Cabinet standard drawings. Grates are to have security chains attaching them to the structure.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify items provided by other sections of Work are properly sized and located.
B Verify that built-in items are in proper location, and ready for roughing into Work.
C Verify excavation for structure is correct.

3.02 PREPARATION

A Coordinate placement of pipe required by other sections.

3.03 INSTALLATION - HEADWALLS

A Form bottom of excavation clean and smooth to correct elevation.
B Establish elevations and pipe inverts for outlets as indicated.

C Set grate in recessed notches formed into the headwall wing walls, secure to top headwall with galvanized chain of a length that will allow removal for inspection.

D All lift hook holes are to be grouted flush with the face of the structure using a hydraulic, non-shrink grout that will provide a finish to match that of the structure.

E Coordinate with other sections of work to provide correct size, shape, and location.

3.04 FIELD QUALITY CONTROL

A See Division 1 Sections for general requirements for testing and inspections.

B Structures that are cracked, broken or otherwise damaged will require repair or replacement as determined by the Architect.

C The contractor is to provide someone to remove and replace all grates for any punch list visits that involve the storm water system.

3.05 SCHEDULES

A Storm Sewer Headwalls: Refer to the storm structure schedule shown on the Contract Drawings.

END OF SECTION

SECTION 334913 - STORM DRAINAGE MANHOLES, FRAMES AND COVERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A Modular precast concrete manhole sections with tongue-and-groove joints covers, anchorage, and accessories.

1.02 RELATED REQUIREMENTS

A Division 01 - Comply with all related requirements.
B Section 015713 - Temporary Erosion and Sediment Controls for temporary inlet protection
C Section 334100 - Subdrainage
D Section 334101 - Site Storm Drainage Piping

1.03 REFERENCE STANDARDS

A ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2005.
B ASTM A 48/A 48M - Standard Specification for Gray Iron Castings; 2003.
C ASTM C 478 - Standard Specification for Precast Reinforced Concrete Manhole Sections; 2007.
D ASTM C 923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals; 2007.

1.04 SUBMITTALS

A See Section 013000 - Administrative Requirements, for submittal procedures.
B Shop Drawings: Indicate manhole locations, elevations, piping sizes and elevations of penetrations.
C Product Data: Provide manhole covers, component construction, steps , features, configuration, and dimensions.

1.05 QUALITY ASSURANCE

A Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A Cold and Hot Weather Requirements: Comply with requirements of ACI 530.1/ASCE 6/TMS 602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MATERIALS

A Manhole Sections: Reinforced precast concrete in accordance with ASTM C 478 (ASTM C 478M), with resilient connectors complying with ASTM C 923 (ASTM C 923M).

2.02 COMPONENTS

A Lid and Frame: ASTM A 48/A 48M, Class 30B Cast iron construction, machined flat bearing surface, removable lid, scheduled lid design; live load rating of H-20; lid molded with identifying name ;.
   1. Solid lids shall have the designation of "STORM" cast into the lid.
B Manhole Steps: #4 Bar with formed Copolymer Polypropylene Plastic coating rungs; 3/4 inch diameter. Formed integral with manhole sections.

2.03 CONFIGURATION

A Shaft Construction: Concentric with eccentric cone top section as required; lipped male/female joints; sleeved to receive pipe sections. Top slab opening is to be per the drawings and steps are to be aligned with the lid/grate opening.
B Shape: Cylindrical.
C Clear Inside Dimensions: As required for shown pipe sizes and configurations. Structure diameter is to remain consistent from the bottom section to the cone or top slab that supports the casting.

D Design Depth: As indicated.
E Clear Lid Opening: 24 inches diameter minimum.
F Steps: 12 inches wide, 16 inches on center vertically, set into manhole wall. Steps are required for all structures that are 36-inches deep or deeper from grate/lid to bottom of structure. Top manhole step is to be no more than 24-inches from the lid/grate elevation.

PART 3 EXECUTION

3.01 EXAMINATION

A Verify items provided by other sections of Work are properly sized and located.
B Verify that built-in items are in proper location, and ready for roughing into Work.
C Verify excavation for manholes is correct.

3.02 PREPARATION

A Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 MANHOLES

A Place concrete base pad, trowel top surface level.
B Place manhole sections plumb and level, trim to correct elevations and anchor as necessary.
C Cut and fit for pipe.
D Seal section and top joints with Conseal Sealant or approved equivalent.
E Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.
F Set cover frames and covers level without tipping, to correct elevations.
G Coordinate with other sections of work to provide correct size, shape, and location.
H Grout pipes to structure.

3.04 FIELD QUALITY CONTROL

A See Division 1 Sections for general requirements for testing and inspections.
B Structures that are cracked, broken or otherwise damaged will require repair or replacement as determined by the Architect.
C The Contractor shall provide someone to remove and replace all grates for any punch list visits that involve the storm water system. Contractor shall also provide all required equipment needed to meet OSHA confined space requiremtns associated with inspecting the drainage structure.

END OF SECTION

Clark County Miscellaneous Renovation
Phase C

Winchester, Kentucky
for the
Clark County Board of Education

1600 W Lexington, Winchester, Kentucky 40391
p 859.744.4545

BG 26-108
RTA # 25019

Volume 1
GRC Practice Field

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CONSTRUCTION MANAGER:

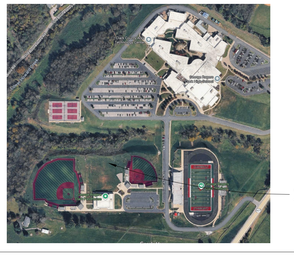
CODELL CONSTRUCTION
Winchester, Kentucky 40391
p 859.744.2222

INDEX OF DRAWINGS

Project Site Address

2745 Boonesboro Rd,
Winchester, KY 40391

Vicinity Map



Project Vicinity Map

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a MOREgroup brand

COVER SHEET
CLARK COUNTY MISCELLANEOUS RENOVATIONS - PHASE C
FOR:
CLARK COUNTY BOARD OF EDUCATION
620 BOONE AVE. WINCHESTER, KY 40391

Construction Manager:
Codell Construction Co.
p 859.744.2222

BG 26-108

Project No:	25019
Drawn By:	TSS
Rev'd By:	MBM,LMR,DPS

SHEET RELEASE

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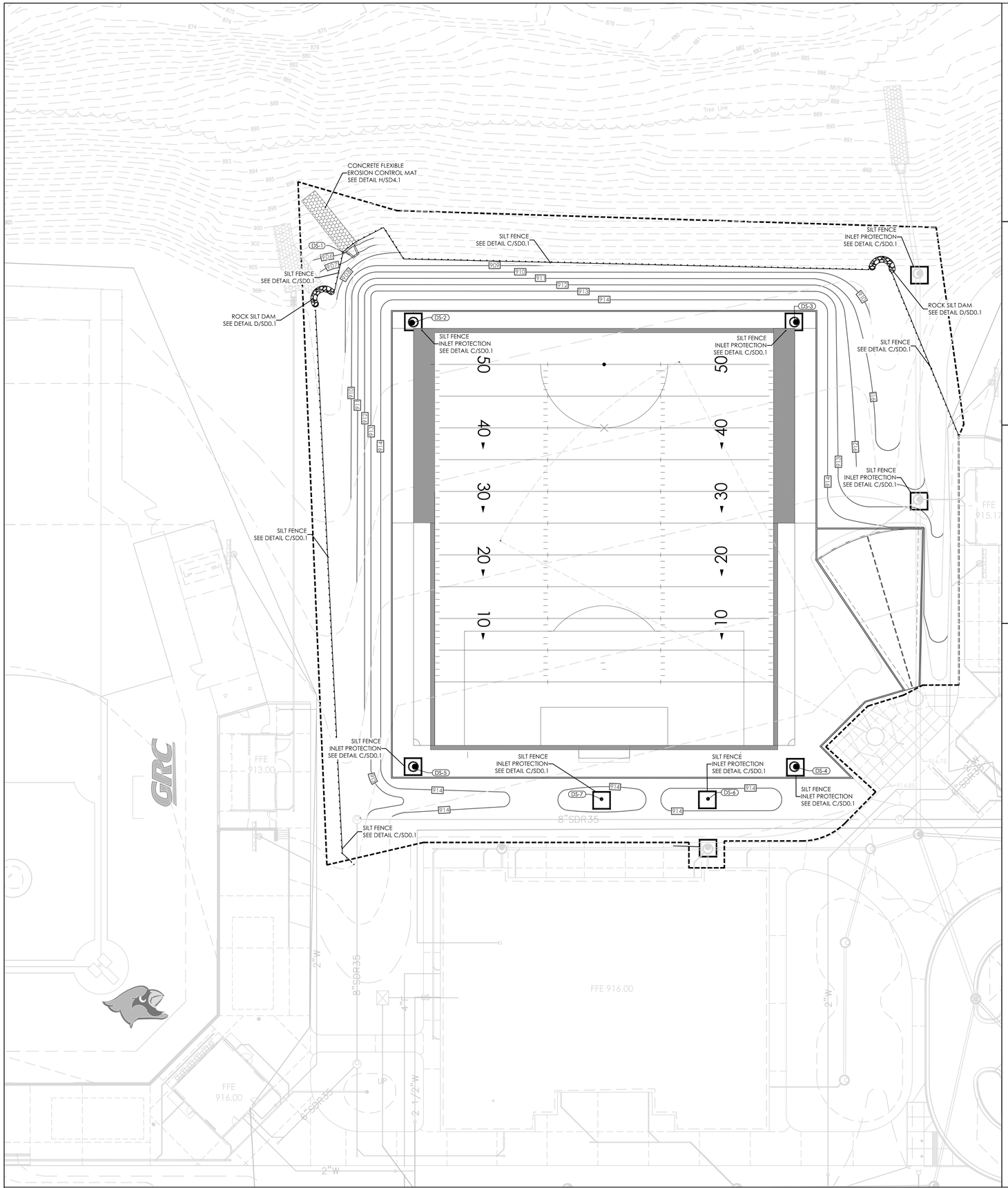
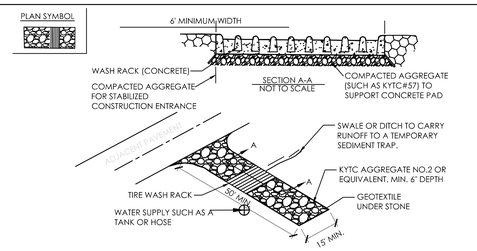
CONSTRUCTION DOCUMENTS

G0.0

COVER SHEET

DATE ISSUED:
MARCH 27, 2026





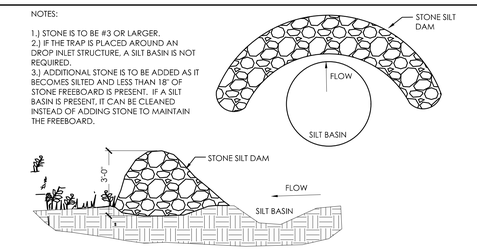
CONSTRUCTION ENTERANCE

SCALE : N.T.S.

E SD0.1

NOTES:

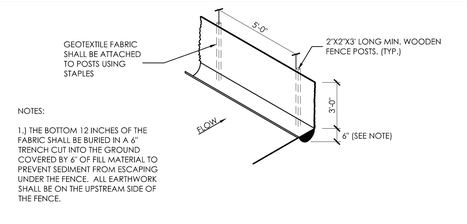
1.) STONE IS TO BE #3 OR LARGER.
2.) IF THE TRAP IS PLACED AROUND AN DROP INLET STRUCTURE, A SILT BASIN IS NOT REQUIRED.
3.) ADDITIONAL STONE IS TO BE ADDED AS IT BECOMES SILTED AND LESS THAN 18" OF STONE FREEBOARD IS PRESENT. IF A SILT BASIN IS PRESENT, IT CAN BE CLEANED INSTEAD OF ADDING STONE TO MAINTAIN THE FREEBOARD.



ROCK SILT DAM

SCALE : N.T.S.

D SD0.1



NOTES:

1.) THE BOTTOM 12 INCHES OF THE FABRIC SHALL BE BURIED IN A 6" TRENCH CUT INTO THE GROUND COVERED BY 6" OF FILL MATERIAL TO PREVENT SEDIMENT FROM ESCAPING UNDER THE FENCE. ALL EARTHWORK SHALL BE ON THE UPSTREAM SIDE OF THE FENCE.

SILT FENCE DETAIL

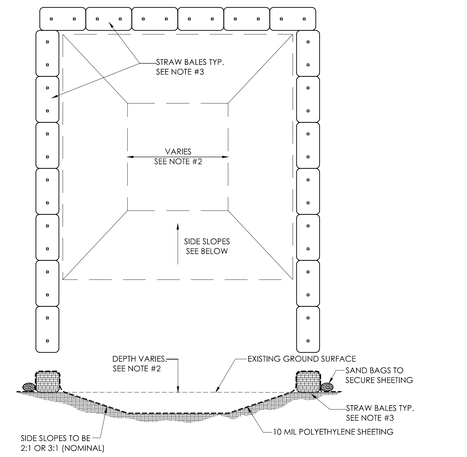
SCALE : N.T.S.

C SD0.1

1. CONCRETE WASHOUT AREA(S) SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE. THE CONCRETE WASHOUT AREA SHALL BE ENTIRELY SELF CONTAINED. LOCATION TO BE COORDINATED WITH THE ARCHITECT AND THE OWNER.
2. THE CONTRACTOR SHALL SUBMIT THE DESIGN, LOCATION AND SIZING OF THE CONCRETE WASHOUT AREAS TO THE ARCHITECT FOR APPROVAL PRIOR TO ANY CONCRETE PLACEMENT. COORDINATE LOCATION WITH THE EROSION POLLUTION AND SEDIMENT CONTROL PLAN.

   LOCATION: WASHOUT AREA(S) ARE TO BE LOCATED AT LEAST 50-FEET FROM AND STREAM, WETLAND, STORM DRAINS OR OTHER SENSITIVE RESOURCE. THE FLOOD CONTINGENCY PLAN MUST ADDRESS THE CONCRETE WASHOUT IF THE WASHOUT IS TO BE LOCATED WITHIN THE FLOOD PLANE.

   SIZE: THE WASHOUT MUST HAVE SUFFICIENT VOLUME TO CONTAIL ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS INCLUDING, BUT NOT LIMITED TO OPERATIONS ASSOCIATED WITH GROUT AND MORTAR.
3. SURFACE DISCHARGE IS UNACCEPTABLE. THEREFORE, STRAW BALES OR OTHER CONTROL MEASURES, AS APPROVED BY THE ARCHITECT, SHOULD BE USED AROUND THE PERIMETER OF THE CONCRETE WASHOUT AREA FOR CONTAINMENT.
4. SIGNS SHOULD BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CONCRETE AREA(S) AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS. WASHOUT AREA(S) SHOULD BE FLAGGED WITH SAFETY FENCING.
5. WASHOUT AREA(S) ARE TO BE INSPECTED, CLEANED AND REPAIRED AFTER EACH RAIN EVENT OF 0.5-INCHES OR MORE, BUT NO LESS THAN ONCE A WEEK FOR STRUCTURAL INTEGRITY, ADEQUATE HOLDING CAPACITY AND CHECKED FOR LEAKS, TEARS OR OVERFLOWS.
6. HARDENED CONCRETE WASTE SHOULD BE REMOVED AND DISPOSED OF IN A MANNER CONSISTENT WITH ALL APPLICABLE LAWS, REGULATIONS AND GUIDELINES WHEN THE WASTE HAS ACCUMULATED TO HALF OF THE CONCRETE WASHOUTS HEIGHT.



CONCRETE WASHOUT AREA

SCALE : N.T.S.

B SD0.1

EROSION POLLUTION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20'

A SD0.1

0 20 40 Feet

GENERAL SITE NOTES

1. THE SITE PLANS WERE PREPARED BASED UPON PREVIOUS DEVELOPMENT PLANS CREATED FOR THIS SITE. THESE PLANS MAY BE MADE AVAILABLE UPON REQUEST
2. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SITE FEATURES AND CONDITIONS. REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION.
3. THE ARCHITECT AND ARCHITECT'S CONSULTANTS SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL OR DISPOSAL OF, OR EXPOSURE OF PERSONS TO HAZARDOUS MATERIALS IN ANY FORM AT THE PROJECT SITE, INCLUDING BUT NOT LIMITED TO ASBESTOS, ASBESTOS PRODUCTS, POLYCHLORINATED BIPHENYL (PCB) OR OTHER TOXIC SUBSTANCES.
4. THE CONTRACTOR SHALL USE EXTREME CARE IN WORKING AROUND EXISTING OVERHEAD AND UNDERGROUND UTILITIES. MEASURES SHOULD BE TAKEN TO PROTECT ALL UTILITIES FROM DAMAGE DURING CONSTRUCTION.
5. SEE EROSION POLLUTION AND SEDIMENT CONTROL PLAN ON SD0.1 FOR RECOMMENDED BEST MANAGEMENT PRACTICES INFORMATION AND SEDIMENT CONTROLS.
6. REFER TO CONSTRUCTION MANAGER'S PLANS AND SPECIFICATIONS FOR INFORMATION REGARDING CONSTRUCTION SCHEDULE/SEQUENCING, CONSTRUCTION FENCING/STAGING.

SITE BMP NOTES

1. CONTRACTOR IS TO PROVIDE ALL KPDES PERMITS, NOTICES OF INTENT (NOI'S) AND NOTICES OF TERMINATION INCLUDING EROSION AND SEDIMENT CONTROL PLANS FOR ALL PHASES OF CONSTRUCTION. ALL KPDES AND RELATED DIVISION OF WATER REQUIREMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL THE PROJECT IS CLOSED OUT AND THE NOTICE OF TERMINATION APPROVED.
2. SEDIMENT CONTROL FENCING SHOWN AND REFERENCES TO SEDIMENT CONTROLS AT STORM WATER STRUCTURES AND ELSEWHERE ON THE DOCUMENTS ARE NOT TO BE USED FOR DIVISION OF WATER REQUIREMENTS. THESE REFERENCES ARE ONLY REQUIRED BY THE DESIGNER FOR PROPER MAINTENANCE OF THE STORM WATER SYSTEM AND TO MINIMIZE CLEANING OF THE SYSTEM AND PAVEMENTS.
3. EXISTING VEGETATION IS TO BE LEFT INTACT UNTIL CONSTRUCTION IN THAT PARTICULAR LOCATION IS REQUIRED. SOIL STABILIZATION PRACTICES (SEEDING, MULCHING, ETC.) ARE TO BEGIN WITHIN 14 DAYS OF PERMANENT COMPLETION OR TEMPORARY HALT (21 DAYS OR MORE) OF WORK IN ANY PARTICULAR AREA.
4. PERIMETER SEDIMENT AND EROSION CONTROLS ARE TO BE INSTALLED PRIOR TO THE START OF SITE CLEARING AND GRUBBING. EROSION CONTROLS SHALL BE IN ACCORDANCE WITH KYTC. CONTROL SHALL BE ACCOMPLISHED BY USE OF INTERCEPTOR DITCHES, DITCH SILT CHECKS, TEMPORARY SEEDING AND OTHER MEASURES AS MAY BE EFFECTIVE IN ACHIEVING THE DESIRED EFFECT. SILT FENCE SHALL BE INSTALLED TO PREVENT EROSION AND WASH-OFF ONTO WALKS, PAVEMENTS AND ALL ADJOINING PROPERTIES.
5. INSTALL SEDIMENT CONTROL FENCE OR SEDIMENT TRAPS AROUND ALL STORM WATER INLETS AND MAINTAIN UNTIL VEGETATION IS ESTABLISHED OR AREA PAVED AS APPROVED BY THE ARCHITECT. STORM WATER INLET PROTECTION IS TO BE INSTALLED IMMEDIATELY AFTER INSTALLATION OF THE STRUCTURES. REMOVE PROTECTIONS AT THE COMPLETION OF THE PROJECT WHEN CONDITIONS NO LONGER WARRANT THEIR USE. SEE EROSION POLLUTION AND SEDIMENT CONTROL PLAN FOR DETAILS.
6. TYPICAL SILT FENCE AND SEDIMENT TRAP INSTALLATION DETAILS ARE SHOWN ON THE EROSION POLLUTION AND SEDIMENT CONTROL PLAN. SEE KYTC STANDARDS FOR INFORMATION CONCERNING THE STONE SILT CHECKS.
7. SEDIMENT CONTROLS ARE TO BE INSPECTED, CLEANED AND REPAIRED AFTER EACH RAIN EVENT OF 0.5 INCHES OR MORE, BUT NO LESS THAN ONCE PER WEEK. A LOG OF INSPECTIONS AND CLEANING IS TO BE KEPT ON SITE.
8. THE LOCATIONS OF SEDIMENT CONTROLS SHOWN ARE FOR GENERAL PROTECTION PRACTICES AND NOT AS PART OF A BMP PLAN. IF CONSTRUCTION ACTIVITIES PRODUCE CONDITIONS THAT REQUIRE ADDITIONAL CONTROLS, IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE, INSTALL AND MAINTAIN THE CONTROLS UNTIL CONDITIONS NO LONGER WARRANT THEIR USE.
9. ALL STORM DRAINAGE CATCH BASINS, CURB INLETS, AND JUNCTIONS BOXES ARE TO RECEIVE PROTECTION FROM SEDIMENTATION. AT A MINIMUM A PERIMETER SILT FENCE SHOULD BE INSTALLED AROUND THE DRAINAGE STRUCTURE AND INSTALLED UNDER THE GRATE.
10. LOCATION OF CONSTRUCTION ENTRANCE TO BE COORDINATED WITH OWNER. SEE DETAIL E/SD0.1
11. LOCATION OF CONCRETE WASHOUT AREA TO BE COORDINATED WITH OWNER. SEE DETAIL B/SD0.1
12. EXTENTS OF SILT FENCE SHOWN ARE A MINIMUM REQUIREMENT. SILT FENCE IS TO BE ADDED/ADJUSTED AS NECESSARY FOR SOIL STOCKPILES.
13. LOCATION OF SOIL STOCKPILES IS TO BE COORDINATED BETWEEN THE OWNER AND THE CONTRACTOR. ANY AREAS USED FOR STOCKPILES ARE TO BE RETURNED TO THEIR ORIGINAL CONDITION.

LEGEND

- SEDIMENT CONTROL FENCE. ADDITIONAL FENCE MAY BE REQUIRED AT OTHER AREAS DURING CONSTRUCTION. SEE DETAIL C/SD0.1
- LIMITS OF CONSTRUCTION
- SILT CHECK DAM - SEE DETAIL D/SD0.1
- INLET PROTECTION. SEE DETAIL C/SD0.1
- CONSTRUCTION ENTRANCE. SEE DETAIL E/SD0.1
- CONCRETE WASHOUT AREA. SEE DETAIL B/SD0.1
- CONCRETE FLEXIBLE EROSION CONTROL MAT. SEE DETAIL I/SD4.1

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03/27/2026

EROSION POLLUTION AND SEDIMENT CONTROL PLAN
CLARK CO. RDC MISCELLANEOUS RENOVATIONS - PHASE C
FOR:
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620 BOONE AVE. WINCHESTER, KY 40391

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CONSTRUCTION DOCUMENTS

SD0.1

EROSION POLLUTION AND SEDIMENT CONTROL PLAN

DATE ISSUED:
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GENERAL SITE NOTES

1. THE SITE PLANS WERE PREPARED BASED UPON PREVIOUS DEVELOPMENT PLANS CREATED FOR THIS SITE. THESE PLANS MAY BE MADE AVAILABLE UPON REQUEST
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4. THE CONTRACTOR SHALL USE EXTREME CARE IN WORKING AROUND EXISTING OVERHEAD AND UNDERGROUND UTILITIES. MEASURES SHOULD BE TAKEN TO PROTECT ALL UTILITIES FROM DAMAGE DURING CONSTRUCTION.
5. SEE EROSION POLLUTION AND SEDIMENT CONTROL PLAN ON SD0.1 FOR RECOMMENDED BEST MANAGEMENT PRACTICES INFORMATION AND SEDIMENT CONTROLS.
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SITE DEMOLITION TAGS

◇0 EXISTING TO REMAIN. PROTECT THROUGHOUT CONSTRUCTION.
- (a) BUILDING TO REMAIN. NO UTILITIES TO THESE FACILITIES ARE TO BE REMOVED UNLESS NEW PERMANENT UTILITY IS PROVIDED PRIOR TO DEMOLITION.
- (b) PAVEMENT TO REMAIN - PATCH/REPAIR WHERE DAMAGED BY CONSTRUCTION. SAW-CUT TO PROVIDE CLEAN EDGE. CONCRETE PAVING TO BE SAW-CUT BACK TO NEAREST UNDAMAGED CONTROL OR ISOLATION JOINT. MATCH NEW ADJACENT PAVEMENT TO EXISTING PAVEMENT ELEVATIONS
- (c) STORM LINE/STRUCTURE TO REMAIN.
- (d) ATHLETIC EQUIPMENT TO REMAIN.
- (e) EXISTING UTILITY LINE/STRUCTURE TO REMAIN.

◇1 DEMOLISH AND REMOVE CONCRETE PAVEMENT, AND AGGREGATE BASE. SAWCUT EDGES AND PROTECT ADJACENT BUILDING.

◇2 DEMOLISH AND REMOVE EXISTING CONCRETE CURB.

◇3 REMOVE EXISTING SHOT PUT INFILL MATERIAL

LEGEND

- LIMITS OF CONSTRUCTION
- CONCRETE DEMOLITION
- SHOT PUT AREA INFILL TO BE REMOVED.

DEMOLITION PLAN
SCALE : 1"= 20'

A SD0.2

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STATE OF KENTUCKY
MICHAEL B. MAYS
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03/27/2026

DEMOLITION PLAN
CLARK CO. RDC MISCELLANEOUS RENOVATIONS - PHASE C
FOR:
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SD0.2

DEMOLITION PLAN

DATE ISSUED:
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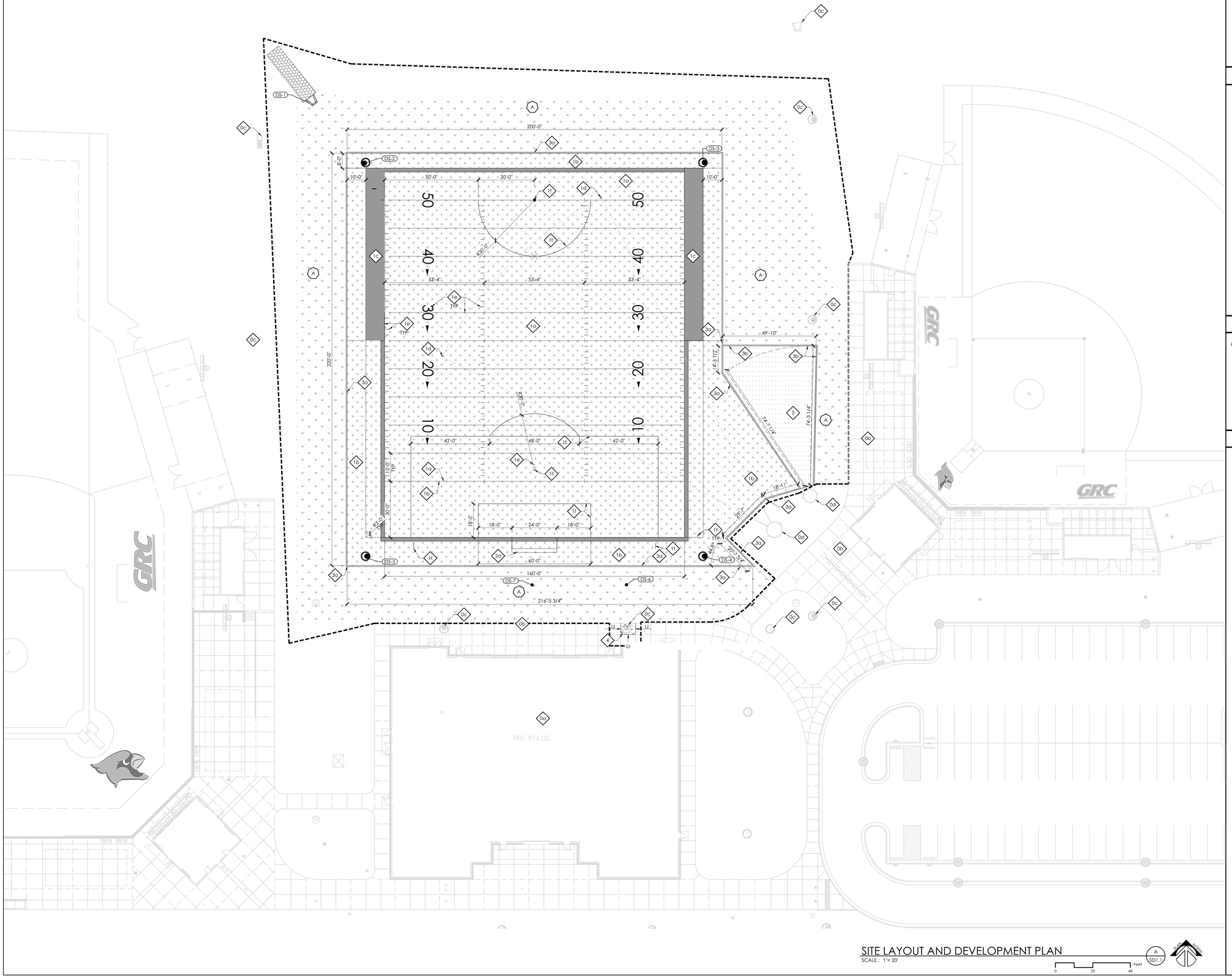

SITE LAYOUT AND DEVELOPMENT PLAN
SCALE: 1"= 20'

0 20 40 Feet

A SD1.1

GENERAL SITE NOTES

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SITE DEVELOPMENT TAGS

0 EXISTING TO REMAIN. PROTECT THROUGHOUT CONSTRUCTION.
- [a] BUILDING TO REMAIN. NO UTILITIES TO THESE FACILITIES ARE TO BE REMOVED UNLESS NEW PERMANENT UTILITY IS PROVIDED PRIOR TO DEMOLITION.
- [b] PAVEMENT TO REMAIN - PATCH/REPAIR WHERE DAMAGED BY CONSTRUCTION. SAW-CUT TO PROVIDE CLEAN EDGE. CONCRETE PAVING TO BE SAW-CUT BACK TO NEAREST UNDAMAGED CONTROL OR ISOLATION JOINT. MATCH NEW ADJACENT PAVEMENT TO EXISTING PAVEMENT ELEVATIONS
- [c] STORM LINE/STRUCTURE TO REMAIN.
- [d] ATHLETIC EQUIPMENT TO REMAIN.

1 ARTIFICIAL TURF (321823.29)
- [a] FIELD AREA. COLORS TO BE ALTERNATING GREEN. SEE DETAIL B/SD4.1
- [b] FIELD AREA. COLOR TO BE SOLID GREEN. SEE DETAIL B/SD4.1
- [c] FOOTBALL TEAM AREA. COLOR TO BE WHITE.
- [d] 2' X 2' BLACK DISCUS VECTOR POINT TURF MARKER.
- [e] FOOTBALL FIELD MARKINGS. COLOR TO BE WHITE. SEE DETAIL D/SD4.1
- [f] SOCCER FIELD MARKINGS. COLOR TO BE BLACK.

2 ATHLETIC EQUIPMENT (116833.23)
- [a] SOCCER GOAL AND NET.

3 CONCRETE CURB (321313, 321613, 321726)
- [a] 6" FLUSH HEADER CURB AT SYNTHETIC TURF. SEE DETAIL C/SD4.1
- [b] 6" HEADER CURB. SEE DETAIL A/SD4.1

4 CONCRETE PAVEMENT (321313, 321373)
- [a] 4" DEPTH CONCRETE PAVEMENT- SEE DETAIL. J/SD4.1

5 SHOT PUT LANDING AREA. SEE DETAIL G/SD4.1

LANDSCAPE TAGS

A SEED AND MULCH/HYDROSEED PER SPECIFICATIONS. PROVIDE EROSION CONTROL NETTING PER SPECIFICATIONS.

LEGEND

- SYNTHETIC TURF
- SEEDED AREA
- LIMITS OF CONSTRUCTION
- IJ ISOLATION JOINT

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SD1.1
SITE LAYOUT AND DEVELOPMENT PLAN

DATE ISSUED:
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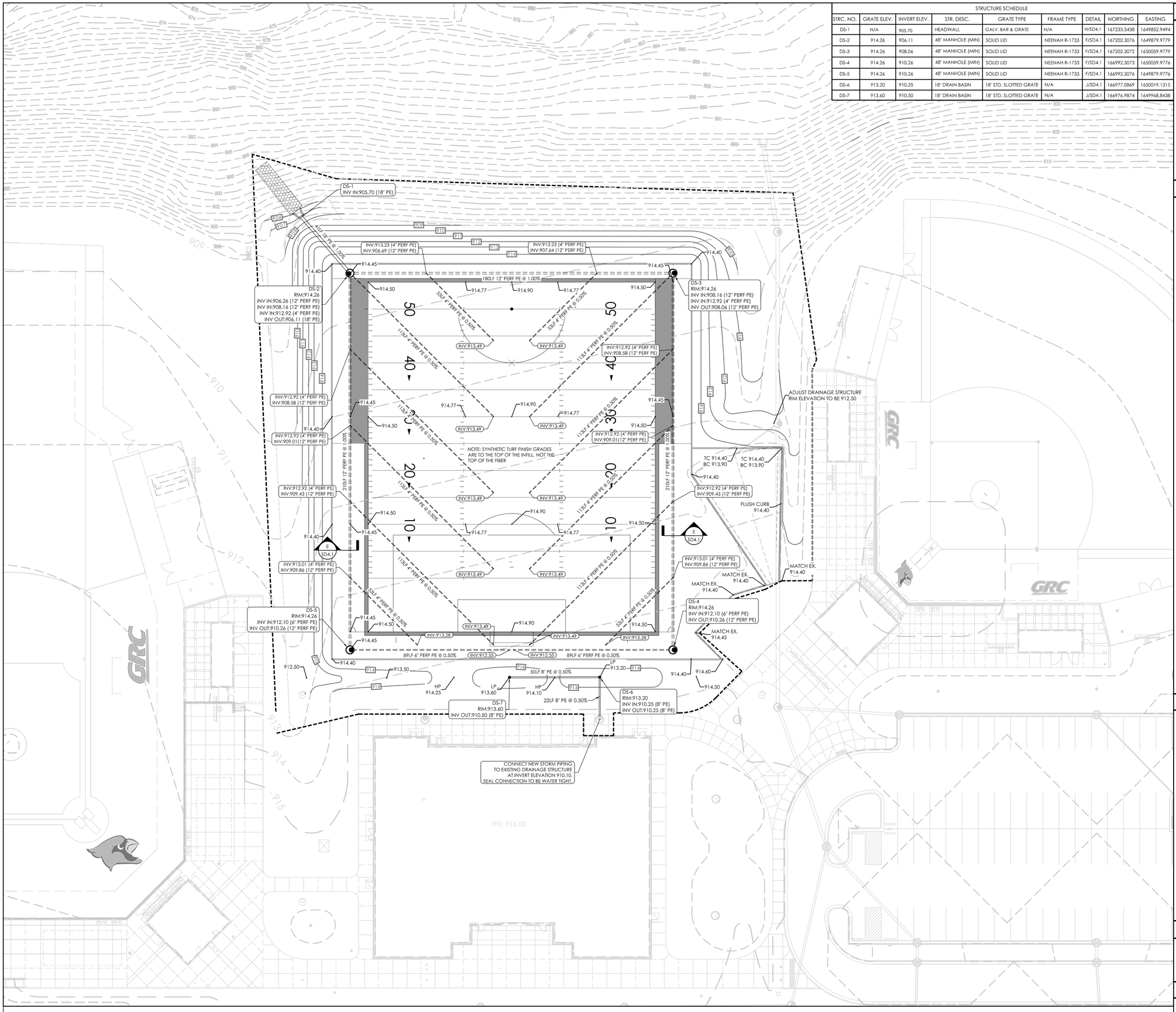
STRUCTURE SCHEDULE

STRC. NO.	GRATE ELEV.	INVERT ELEV.	STR. DESC.	GRATE TYPE	FRAME TYPE	DETAIL	NORTHING	EASTING
DS-1	N/A	905.70	HEADWALL	GALV. BAR & GRATE	N/A	H/SD4.1	167233.5438	1649852.9494
DS-2	914.26	906.11	48" MANHOLE (MIN)	SOLID LID	NEENAH R-1733	F/SD4.1	167202.3076	1649879.9779
DS-3	914.26	908.06	48" MANHOLE (MIN)	SOLID LID	NEENAH R-1733	F/SD4.1	167202.3072	1650059.9779
DS-4	914.26	910.26	48" MANHOLE (MIN)	SOLID LID	NEENAH R-1733	F/SD4.1	166992.3073	1650059.9776
DS-5	914.26	910.26	48" MANHOLE (MIN)	SOLID LID	NEENAH R-1733	F/SD4.1	166992.3076	1649879.9776
DS-6	913.20	910.25	18" DRAIN BASIN	18" STD. SLOTTED GRATE	N/A	J/SD4.1	166977.0869	1650019.1315
DS-7	913.60	910.50	18" DRAIN BASIN	18" STD. SLOTTED GRATE	N/A	J/SD4.1	166976.9874	1649968.8438



SITE STORM DRAINAGE NOTES

1. ALL PE PIPE SHALL BE DUAL WALL POLYETHYLENE PIPE WITH SMOOTH INTERIOR WALL, OR EQUIVALENT AS APPROVED IN THE SPECIFICATIONS. ALL STORM PIPING SHALL BE INSTALLED AT A CONSTANT, POSITIVE SLOPE FROM INLET CONNECTION TO DISCHARGED CONNECTION. PIPE SLOPE IS TO BE 0.5% MINIMUM.
2. SEDIMENT PROTECTION DEVICES, SUCH AS SILT FENCING SHALL BE INSTALLED IN AND/OR AROUND ALL STORM STRUCTURES.
3. EROSION CONTROL BLANKETS ARE TO BE INSTALLED AS INDICATED IN THE SPECIFICATIONS.
4. ALL STORM STRUCTURES ARE TO BE DESIGNED FOR H-20 LOADING.
5. ALL GRATES AND MANHOLE COVERS ARE TO BE HEAVY DUTY CAST IRON DESIGNED FOR H-20 LOADING.
6. MAINTAIN GRADING TO PROMOTE POSITIVE DRAINAGE AT ALL TIMES.
7. THE LOCATIONS SHOWN FOR THE NEW STORM SEWER PIPING AND STRUCTURES ARE APPROXIMATE. ACTUAL LOCATIONS CAN BE ADJUSTED WITH ARCHITECTS WRITTEN APPROVAL IN ORDER TO AVOID UNFORESEEN CONDITIONS OR OTHER CONSTRUCTION CONFLICTS. CONTRACTOR IS TO COORDINATE STORM SEWER INSTALLATION WITH ALL OTHER TRADES AND WORK.

LEGEND

(DS-#) DRAINAGE STRUCTURE. REFER TO STORM DRAINAGE STRUCTURE SCHEDULE.

SPOT ELEVATION LEGEND

TC - TOP OF CURB
BC - BOTTOM OF CURB
HP - ELEVATION HIGH POINT
LP - ELEVATION LOW POINT

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3. THE ARCHITECT AND ARCHITECT'S CONSULTANTS SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL OR DISPOSAL OF, OR EXPOSURE OF PERSONS TO HAZARDOUS MATERIALS IN ANY FORM AT THE PROJECT SITE, INCLUDING BUT NOT LIMITED TO ASBESTOS, ASBESTOS PRODUCTS, POLYCHLORINATED BIPHENYL (PCB) OR OTHER TOXIC SUBSTANCES.
4. THE CONTRACTOR SHALL USE EXTREME CARE IN WORKING AROUND EXISTING OVERHEAD AND UNDERGROUND UTILITIES. MEASURES SHOULD BE TAKEN TO PROTECT ALL UTILITIES FROM DAMAGE DURING CONSTRUCTION.
5. SEE EROSION POLLUTION AND SEDIMENT CONTROL PLAN ON SD0.1 FOR RECOMMENDED BEST MANAGEMENT PRACTICES INFORMATION AND SEDIMENT CONTROLS.
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SITE GRADING NOTES

1. THE CONTRACTOR SHALL VERIFY LOCATIONS AND ACTUAL DEPTHS OF ALL EXISTING STORM DRAINS, GAS MAINS, WATER MAINS, AND PIPES TO ALL NEW CONNECTIONS AND CROSSINGS. CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO AREAS WHERE CONSTRUCTION OR GRADING MAY INTERFERE WITH SUCH LINES.
2. ANY DISCREPANCIES BETWEEN THIS GRADING PLAN AND ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IN WRITING PRIOR TO EXCAVATION, GRADING, TRENCHING, OR OTHER CONSTRUCTION OF ANY SORT. FAILURE TO NOTIFY THE ARCHITECT IN WRITING PRIOR TO COMMENCEMENT OF EXCAVATION, GRADING, TRENCHING, OR OTHER CONSTRUCTION SHALL IMPLY THE CONTRACTOR'S VERIFICATION OF AND ACCEPTANCE OF EXISTING SITE CONDITIONS. SAID FAILURE TO NOTIFY THE ARCHITECT IN WRITING SHALL IDENTIFY AND HOLD HARMLESS THE OWNER FROM ANY ADDITIONAL COSTS INCURRED BY THE CONTRACTOR DUE TO DISCREPANCIES NOT REPORTED WHICH COULD HAVE BEEN DETECTED BY PRUDENT AND REASONABLE OBSERVATION AND VERIFICATION BY THE CONTRACTOR.
3. ALL IMPERVIOUS SURFACES SHALL BE GRADED AND INSTALLED WITH A MINIMUM SLOPE OF ONE PERCENT (1%) AND A MAXIMUM SLOPE OF SEVEN PERCENT (7%)
4. ALL PERVIOUS SURFACES SHALL BE GRADED AND INSTALLED WITH A MINIMUM SLOPE OF TWO PERCENT (2%) AND A MAXIMUM SLOPE OF THIRTY-THREE PERCENT (33%) EXCEPT WHERE SHOWN.
5. SLOPE PERVIOUS SURFACES MIN. 2 % AND IMPERVIOUS SURFACES MIN. 1% AWAY FROM BUILDING FOUNDATIONS.
6. MAINTAIN GRADING TO PROMOTE POSITIVE DRAINAGE AT ALL TIMES. DO NOT ALLOW WATER TO POND IN CONSTRUCTION AREAS.
7. RELOCATE ALL BURIED UTILITIES THAT ARE IMPACTED BY ANY EARTHWORK. RELOCATED UTILITY LOCATIONS ARE TO BE APPROVED BY THE ARCHITECT PRIOR TO STARTING WORK.
8. PROTECT AREAS TO BE SEEDED AS FOLLOWS:
   A) DITCHES AND DRAINAGE SWALES ARE TO RECEIVE HIGH-VELOCITY EROSION-CONTROL BLANKETS.
   B) SLOPES 4:1 (H:V) OR GREATER ARE TO RECEIVE LONG- TERM EROSION-CONTROL BLANKETS.
   C) SLOPES BETWEEN 4:1 AND 6:1 (H:V) ARE TO RECEIVE SHORT-TERM EROSION CONTROL BLANKETS.
   D) SLOPES BELOW 6:1 (H:V) ARE TO RECEIVE STRAW MULCH PER THE SPECIFICATIONS. DO NOT USE HAY.
9. ANY AREAS DISTURBED DURING CONSTRUCTION ARE TO BE RECONDITIONED, SEEDED AND MULCHED PER THE SPECIFICATIONS.
10. COMPACT SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF THEIR STANDARD PROCTOR MAXIMUM DRY DENSITY AT PLUS OR MINUS TWO (2) PERCENT OF OPTIMUM MOISTURE CONTENT:

    A) UNDER FLOOR SLABS AND FOUNDATIONS ON STRUCTURAL FILL - 98%
    B) FILLS ON EXISTING SOILS, ROCK CUTS OR SHOT-ROCK FILL - 98%
    C) PAVED AREAS AND WALKS - 95%
    D) LANDSCAPE AREAS OUTSIDE MASS FILL AREAS - 85%
11. ALL TREES THAT ARE IDENTIFIED BY THE ARCHITECT TO REMAIN, EITHER ON THE DRAWING OR IN THE FIELD, ARE TO BE PROTECTED IN ACCORDANCE WITH THE SPECIFICATIONS. ALL TREES LOCATED OUTSIDE OF AREAS IDENTIFIED TO BE RE-GRADED ARE TO BE PROTECTED IN ACCORDANCE WITH THE SPECIFICATIONS.
12. THE CONTRACTOR SHALL ENSURE THAT CONSTRUCTION DEBRIS AND SEDIMENT ARE REMOVED DAILY FROM SITE DRIVEWAYS, PARKING AREAS, WALKWAYS AND SURROUNDING ROADWAYS AND WALKWAYS.
13. EXCESS SOILS ARE TO BE DISPOSED OF OFF-SITE.
14. THE NEW PARKING, ROADS AND ROAD BASE ARE NOT DESIGNED TO ACCOMMODATE CONSTRUCTION TRAFFIC AND SHOULD NOT BE USED FOR SUCH UNLESS STABILIZED USING #2 CRUSHED STONE AND/OR GEO-GRID IN ADDITION TO THE PAVEMENT DESIGN SECTION SHOWN. IF THE CONTRACTOR WISHES TO USE THE NEW ROAD ALIGNMENTS DURING CONSTRUCTION, IT IS THE CONTRACTORS RESPONSIBILITY TO STABILIZE THE ROAD ALIGNMENT SUBGRADES AND PREVENT THEM FROM BEING DAMAGED DURING CONSTRUCTION.
15. THE CONTRACTOR SHALL INSTALL AND MAINTAIN A CRUSHED STONE ENTRY AND DRIVE TO REDUCE SOIL TRACKING. REFER TO EPSC PLAN.

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STATE OF KENTUCKY
MICHAEL B. MAYS
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03/27/2026

SITE GRADING AND DRAINAGE PLAN
CLARK CO. RDC MISCELLANEOUS RENOVATIONS - PHASE C
FOR:
CLARK COUNTY BOARD OF EDUCATION
620 BOONE AVE. WINCHESTER, KY 40391

Construction Management:
Codell Construction
Winchester, KY
p 859.744.2222

BG 26-108

Project No:	25019
Drawn By:	TSS
Rev'd By:	MBM,LMR,DPS

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7		
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CONSTRUCTION DOCUMENTS

SD2.1

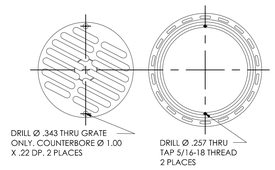
SITE GRADING AND DRAINAGE PLAN

DATE ISSUED:
MARCH 27, 2026

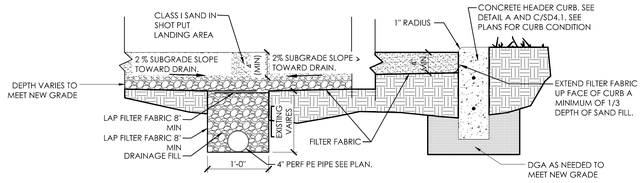
SITE GRADING AND DRAINAGE PLAN
SCALE : 1"= 20'

(A / SD2.1)

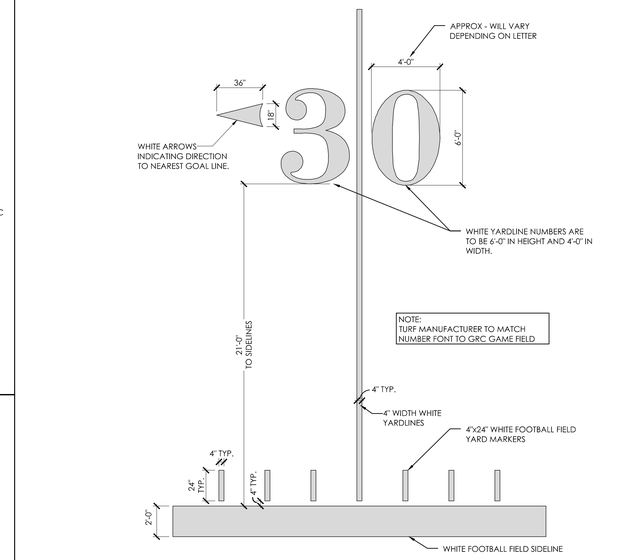
0 20 40 Feet



DRAIN BASIN
SCALE : N.T.S. — K / SD4.1

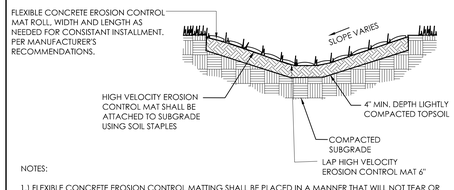


SHOT PUT LANDING AREA
SCALE : NTS — G / SD4.1



FIELD NUMBERING AND STRIPING DETAIL
SCALE : N.T.S. — D / SD4.1

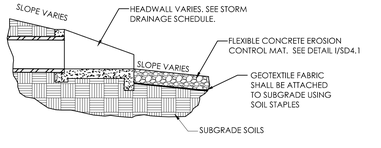
CONCRETE PAVEMENT
SCALE : N.T.S. — J / SD4.1



NOTES:

1.) FLEXIBLE CONCRETE EROSION CONTROL MATTING SHALL BE PLACED IN A MANNER THAT WILL NOT TEAR OR DAMAGE THE EROSION CONTROL BLANKET.
2.) FLEXIBLE CONCRETE EROSION CONTROL MATTING SHALL BE ANCHORED WITH 12' LONG X 3/8" DIAMETER (MIN) SOIL STAPLES/ ANCHORS PER THE FOLLOWING:
SLOPE 1%-6% -10' CENTERS
SLOPE 6%-20% -5' CENTERS
SLOPE >20% -3' CENTERS
3.) OVERSEED EROSION CONTROL MATTING IMMEDIATELY AFTER INSTALLATION AND WATER AS NEEDED, ENSURING THAT SEED IS GENTLY WASHED INTO SPACES BETWEEN COBBLES AND NOT WASHED AWAY.

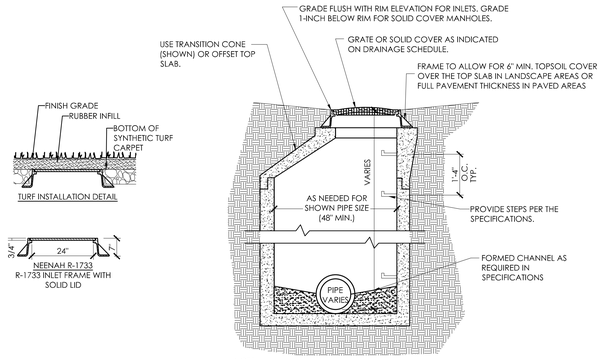
CONCRETE FLEXIBLE EROSION CONTROL MAT
SCALE : N.T.S. — I / SD4.1



NOTES:

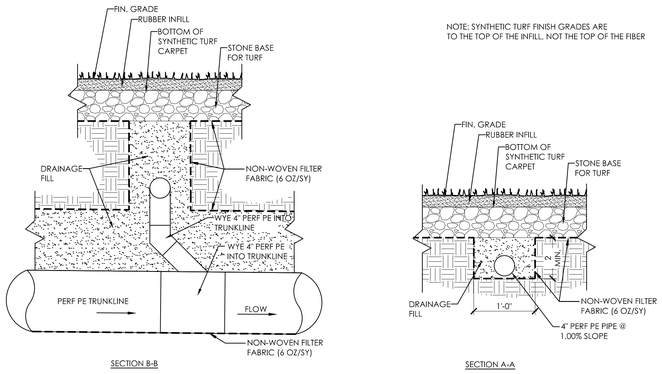
1. CHANNEL LINING SHALL BE PLACED IN A MANNER THAT WILL NOT TEAR OR DAMAGE THE FILTER FABRIC.
2. GEOTEXTILE FABRIC SHALL BE NON-WOVEN DRAINAGE FABRIC SUCH AS AMOCO 4545.
3. GRADING AROUND THE HEADWALL SHOULD BE SUFFICIENT TO PREVENT THE HEADWALL FROM MOVING AND TO PREVENT EROSION AROUND THE HEADWALL. SLOPED HEADWALLS ARE TO BE GRADED FLUSH SO THAT THEY CAN BE MOWED OVER.
4. FLEXIBLE CONCRETE EROSION CONTROL MAT IS TO EXTEND A MINIMUM OF 25-FEET DOWNSTREAM OF THE HEADWALL, AND IS TO EXTEND TO THE TOP OF THE DITCH OR A MINIMUM OF 15-FEET WIDE, WHICHEVER IS GREATER.

HEADWALL DETAIL
SCALE : N.T.S. — H / SD4.1

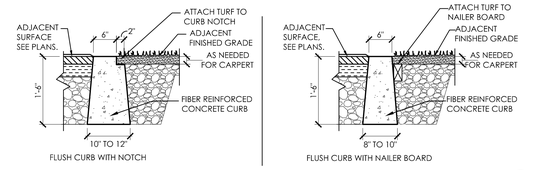


NOTE:
1. REFER TO DRAINAGE SCHEDULE FOR STRUCTURE SIZES.
2. PIPE ORIENTATION SHOWN IS FOR TYPICAL CONSTRUCTION ONLY. ACUTAL PIPE LOCATIONS, SIZES AND ORIENTATIONS MAY DIFFER. REFER TO PROJECT DRAWINGS FOR PIPE INFORMATION.

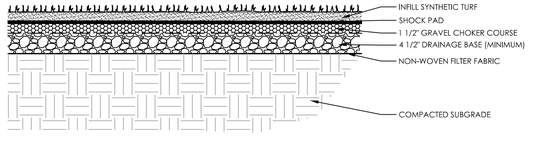
MANHOLE/SURFACE INLET (TYP)
SCALE : N.T.S. — F / SD4.1



TRUNK LINE CONNECTOR DETAIL
SCALE : N.T.S. — E / SD4.1



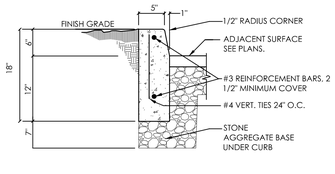
FIELD CONCRETE CURB
SCALE : N.T.S. — C / SD4.1



NOTE: SYNTHETIC TURF FINISH GRADES ARE TO THE TOP OF THE INFILL, NOT THE TOP OF THE FIBER

ARTIFICIAL TURF
SCALE : N.T.S. — B / SD4.1

NOTES:
1. PROVIDE EXPANSION JOINTS & CONTRACTION JOINTS AS REQUIRED-SEE DETAIL J/SD4.1. REFER TO SPEC. SECTION FOR ADDITIONAL REQUIREMENTS. (321613)
2. BACKFILL AT BACK FACE OF CURB TO BE LEVEL WITH THE FINISH ELEVATION OF THE CURB. COMPACT PER THE SPECS.



CONCRETE HEADER CURB
SCALE : N.T.S. — A / SD4.1

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