

MCDOWELL COUNTY BOARD OF EDUCATION MCDOWELL COUNTY, WEST VIRGINIA

PROPOSED MCDOWELL COUNTY OUTDOOR CLASSROOMS

ADDENDUM #3

AUGUST 5, 2021

THRASHER PROJECT #060-10227

TO WHOM IT MAY CONCERN:

A Pre-Bid Conference was held on Tuesday, July 20, 2021 on the above-referenced project. The following is a clarification / notification to all bidders attending the mandatory pre-bid.

A. <u>GENERAL</u>

B. <u>SPECIFICATIONS</u>

ADD Spec Section 321813 Synthetic Grass Surfacing ADD Spec Section 321413 Unilock Non-Permeable Pavers

C. <u>DRAWINGS</u>

REVISED C1.00 REVISED C2.00 REVISED C3.00 REVISED C4.00 REVISED C5.00 REVISED C7.00 REVISED C8.00 REVISED C11.00 ADD C12.00 ADD C13.00 REVISED A1.00 REVISED A2.00 REVISED A3.00 REVISED A4.00 REVISED A5.00

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D. <u>QUESTIONS AND RESPONSES</u>

E. <u>CLARIFICATIONS</u>

If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until 2:00 p.m. on Tuesday, August 10, 2021 at the office of The Thrasher Group, Inc., 160 Association Drive, Charleston, WV. Good luck to everyone and thank you for your interest in the project.

Sincerely,

THE THRASHER GROUP, INC.

Amanda Cheuvront, AIA Project Manager



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MCDOWELL COUNTY SCHOOLS MCDOWELL COUNTY, WEST VIRGINIA FOR THE MCDOWELL COUNTY OUTDOOR CLASSROOMS

- I N D E X -

BIDDING DOCUMENTS

Advertisement for Bids	RFB
Instructions to Bidders	AIA A701
Bid Opening Requirements Bid Opening Checklist Certification of Receipt of Addenda Bid Bond Sample (AIA310) WV Code §21-1D-55 Drug Free Work Place Compliance WV Purchasing Affidavit Affidavit on Non-Collusion	BOR
Bid Form	BID
Standard Form of Agreement between Owner and Contract	AIA A101
Performance and Payment Bonds	AIA A312
Change Order	AIA G701
Application and Certificate for Payment	AIA G702/G703
Certificate of Substantial Completion	AIA G704
Contractor's Affidavit of Payment of Debts and Claims	AIA G706
Contractor's Affidavit of Release of Liens	AIA G706A
Consent of Surety to Final Payment	AIA G707
Consent of Surety to Reduction in or Partial Release of Retainage	AIA G707A
General Conditions	AIA 201
The Thrasher Group, Inc. Modification & Supplements to AIA A201	

SPECIFICATIONS

Summary	011000
Substitution Procedures	012500
Contract Modification Procedures	012600
Payment Procedures	012900
Project Management and Coordination	013100
Construction Progress Documentation	013200
Submittal Procedures	013300
Quality Requirements	014000
Product Requirements	016000
Execution	017300
Closeout Procedures	017700
Temporary Facilities and Controls	015000
Operation and Maintenance Data	017823
Project Record Documents	017839
Miscellaneous Cast-in-Place Concrete	033053
Polished Concrete Finishing	033543
Site Clearing	311100
Earth Moving-Excavation	312000
Erosion and Sedimentation Controls	312500
Concrete Paving Joint Sealants	321373
Unilock Non-Permeable Pavers	321413

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Sidewalks	321623
Synthetic Grass Surfacing	321813
Decorative Metal Fences and Gates	323119
Turf and Grasses	329200
Plants	329300
Storm Utility Drainage Piping	334100

SECTION 321413 - CONCRETE PAVER MATERIALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes the following:
 - 1. Concrete Pavers
 - 2. Joint Sand
 - 3. Setting Bed Sand
 - 4. Base Aggregate

1.02 REFERENCES

Note: Design street, industrial, port and airport pavement thicknesses in consultation with a qualified civil engineer, in accordance with established flexible pavement design procedures, LOCKPAVE[®] software, and in accordance with Interlocking Concrete Pavement Institute Technical Bulletins. Sample construction detail drawings are available from Unilock[®]. This specification may require modifications.

A. ASTM International, latest edition:

- 1. C 33, Standard Specification for Concrete Aggregates.
- 2. C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- 3. C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
- 4. C 144 Standard Specifications for Aggregate for Masonry Mortar.
- 5. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
- 6. C 936, Standard Specification for Solid Concrete Interlocking Paving Units.
- 7. C 979, Standard Specification for Pigments for Integrally Colored Concrete.
- 8. D 698 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5 lb (24.4 N) Rammer and 12 in. (305 mm) drop.
- 9. D 1557 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (44.5 N) Rammer and 18 in. (457 mm) drop.
- 10. C1645 Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units
- 11. D 2940 Graded Aggregate Material for Bases or Subbases for Highways or Airports.
- 12. D 4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- 13. D 4533, Standard Test Method for Index Trapezoidal Tearing Strength of Geotextiles
- 14. D 4833, Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
- 15. D 4491, Standard Test Method for Water Permeability of Geotextiles by Permittivity
- 16. D 4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile

1.03 SUBMITTALS

- A. Concrete Pavers:
 - 1. Samples for verification: Three representative full-size samples of each paver type, thickness, color and finish that indicate the range of color variation and texture expected upon project completion.
 - 2. Accepted samples become the standard of acceptance for the product produced.
 - 3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.
 - 4. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.
- B. Joint and Setting Bed Sand:
 - 1. Provide three representative one pound samples in containers of Joint Sand materials.
 - 2. Provide three representative one pound samples in containers of Setting Bed Sand materials.
 - 3. Test results from an independent testing laboratory for sieve analysis per ASTM C 136 conforming to the grading requirements of ASTM C 144.
- C. Polymeric Joint Sand:
 - 1. Test results from an independent testing laboratory for sieve analysis per ASTM C 136 conforming to the grading requirements of ASTM C 144.
 - 2. Samples for Initial Selection: Provide three representative samples in containers of Polymeric Joint Sand material, cured and dried, for color selection.
 - 3. Samples for Verification: Provide three one pound samples in containers of Polymeric Joint Sand.
- D. Base and Subbase Aggregate:
 - 1. Test results from an independent testing laboratory for sieve analysis per ASTM C 136.
- E. Paving Installation Contractor:
 - 1. Job references from a minimum of three projects similar in size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.
- 1.04 QUALITY ASSURANCE
 - A. Utilize a Manufacturer having at least ten years of experience manufacturing concrete pavers on projects of similar nature or project size.
 - B: Source Limitations:
 - 1. Obtain Concrete Pavers from one source location with the resources to provide products of consistent quality in appearance and physical properties.
 - 2. Obtain Joint and Setting Bed Sands from one source with the resources to provide materials and products of consistent quality in appearance and physical properties.
 - 3. Obtain Polymeric Joint Sand from one source with the resources to provide materials and products of consistent quality in appearance and physical properties.
 - C. Paving Contractor Qualifications:
 - 1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.
 - D. Mockups:
 - 1. Install a 5 ft x 5 ft paver area per each paving pattern.
 - 2. Use this area to determine surcharge of the Setting Bed Sand layer, joint sizes, lines, laying pattern(s) and levelness. This area will serve as the standard by which the workmanship will be judged.
 - 3. Subject to acceptance by owner, mock-up may be retained as part of finished work.
 - 4. If mock-up is not retained, remove and dispose legally.

1.05 DELIVERY, STORAGE & HANDLING

- A. In accordance with Conditions of the Contract and Division 1 Product Requirement Section.
- B. Deliver Concrete Pavers in manufacturer's original, unopened and undamaged container packaging with identification labels intact.
 - 1. Coordinate delivery and paving schedule to minimize interference with normal use of streets and sidewalks adjacent to paver installation.
 - 2. Deliver Concrete Pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
 - 3. Unload Concrete Pavers at job site in such a manner that no damage occurs to the product or adjacent surfaces.
- C. Store and protect materials free from mud, dirt and other foreign materials.
- D. Prevent Joint and Setting Bed Sand from exposure to rainfall or removal by wind with secure, waterproof covering.
- E. Store Polymeric Joint Sand on elevated platforms, under a cover and/or in a dry location.
- 1.06 PROJECT/SITE CONDITIONS
 - A. Environmental Requirements:
 - 1. Install Concrete Pavers only on unfrozen and dry Setting Bed Sand.
 - 2. Install Setting Bed Sand only on unfrozen and dry Base or Subbase Aggregate materials.
 - 3. Install Base or Subbase Aggregates only over unfrozen subgrade.
 - 4. Install Setting Bed Sand or Concrete Pavers when no heavy rain or snowfall are forecast within 24 hours.
 - B. Weather Limitations for Polymeric Jointing Sand:
 - 1. Install Polymeric Joint Sand only when ambient temperature is above 40°F (5°C), under dry conditions with no rain forecast for 24 hours and when surface of pavement is completely dry.

1.07 CONCRETE PAVER OVERAGE AND ATTIC STOCK

- A. Provide a minimum of 5% additional material for overage to be used during construction.
- B. Contractor to provide 100 square feet of each product and size used to owner for maintenance and repair. Furnish Pavers from the same production run as installed materials.
- C. Manufacture to supply maintenance and reinstatement manuals for Concrete Paver units.

PART 2 PRODUCTS

- 2.01 CONCRETE PAVERS
 - A. Basis-of-Design Product: The Concrete Paver shapes are based on:
 - 1. Unilock:
 - a. Brussels Block
 - b. Copthorne
 - 2. As manufactured by: Unilock 12560 SheetsRd, Rittman, OH 44270 Contact: Phil Austin Office Phone: (330) 927-4000 Mobile Phone: (412) 651-7684
 - 3. The specified products establish minimum requirements that substitutions must meet to be considered acceptable.

- Note: Unless required by the owner, an "or equal" line is not necessary when using a basis-of-design specification with the above information is listed and outline in Division 1, Product Substitution Procedures.
- B. Product requirements:
 - 1. Concrete Paver Type 1: Brussels Blocks
 - a. Finish:
 - 1. Standard this is not a face mix finish.
 - b. Color: Almond Grove
 - c. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 inch for length and width. Maximum height tolerance of plus or minus 1/8 inch..
 - 1. XL: 13.75" X 8.25" X 2.75" (34.8 CM X 20.8 CM X 7 CM)
 - 2. Standard: 8.25" X 6.75" X 2.75" (20.8 CM X 17.3 CM X 7 CM)
 - 3. Half: 7" X 4.125 X 2.75" (17.8 CM X 10.4 CM X 7 CM)
 - Note: Imperial dimensions are nominal equivalents to the metric dimensions.
 - 2. Concrete Paver Type 2: Copthorne
 - a. Finish: (Select finish type from below and insert here. Finish type will affect product pricing).
 - 1. Standard this is not a face mix finish.
 - b. Color: Burnt Clay
 - c. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 inch for length and width. Maximum height tolerance of plus or minus 1/8 inch.

1. Standard: 7.875" X 2.5" X 2.375" (20 CM X 6.5 CM X 6 CM) Note: Imperial dimensions are nominal equivalents to the metric dimensions.

C. Provide pavers meeting the minimum material and physical properties set forth in ASTM C 936, Standard Specification for Interlocking Concrete Paving Units. Efflorescence is not a cause for rejection.

1. Average compressive strength 8000 psi (55MPa) with no individual unit under 7,200 psi (50 MPa).

2. Average absorption of 5% with no unit greater than 7% when tested according to ASTM C 140.

- 3. Conforming to ASTM C 1645 when tested for freeze-thaw requirements.
- 4. Height tolerances +/- 3.2 mm (1/8 in).
- Note: Efflorescence is a whitish powder-like deposit that sometimes appears on concrete products. Calcium hydroxide and other water-soluble materials form or are present during the hydration of Portland cement. Pore water becomes saturated with these materials, and diffuses to the surface of the concrete. When this water evaporates, the soluble materials remain as a whitish deposit on the concrete surface. The calcium hydroxide is converted to calcium carbonate during a reaction with carbon dioxide from the atmosphere. The calcium carbonate is difficult to remove with water. However, the efflorescence will wear off with time, and it is advisable to wait a few months before attempting to remove any efflorescence. Commercially available cleaners can be used, provided directions are carefully followed. Some cleaners contain acids that may alter the color of the pavers.
- D. Accept only pigments in concrete pavers conforming to ASTM C 979. Note: ACI Report No. 212.3R provides guidance on the use of pigments.
- E. Maximum allowable breakage of product is 5%.

2.02 JOINT SAND

Α.

Provide natural Joint Sand as follows:

- 1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
- 2. Do not use limestone screenings, stone dust, or sand for the Joint Sand material that does not conform to conform to the grading requirements of ASTM C 33.
- 3. Utilize sands that are as hard as practically available where concrete pavers are subject to vehicular traffic.
- 4. Gradation as shown in Table 1 below:

TABLE 1 – JOINT SAND GRADATION REQUIREMENTS FOR JOINT SAND

	ASTM C 144	
Sieve Size	Natural Sand Percent Passing	Manufactured Sand Percent Passing
No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 75
No. 50 (0.300 mm)	10 to 30	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075)	0 to 1	0 to 10

2.03 POLYMERIC JOINT SAND

- A. Provide Polymeric Joint Sand as manufactured by:
 - 1. Unicare HP Polymeric Max Sand
 - a. Product Type: Dry mix, contains polymeric binding agent, activated with water.b. Color: Tan
- B. Provide Polymeric Joint Sand meeting the minimum material and physical properties as follows:
 - 1. Compression Strength: proven resistance to compression of 550 PSI after drying for 7 days under controlled conditions (73°F (23°C) at 50% humidity).
 - a. Test sand sample shape: cylinder (2" (5 cm) dia. X 4" (10 cm) high).
 - 2. Gradation as shown Table 1 above.

2.04 SETTING BED SAND

- A. Provide Setting Bed Sand as follows:
 - 1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
 - 2. Do not use limestone screenings, stone dust, or sand material that does not conform to conform to the grading requirements of ASTM C 33.
 - 3. Do not use mason sand or sand conforming to ASTM C 144.
 - 4. Utilize sands that are as hard as practically available where concrete pavers are subject to vehicular traffic.
 - 5. Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 2 below:

AST	M C 33
Sieve Size	Percent Passing
3/8 in (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075)	0 to 1

TABLE 2 – SETTING BED SAND

Note: Coarser sand than that specified in Table 1 above may be used for joint sand including C 33 material as shown in Table 2. Use material where the largest sieve size easily enters the smallest joints. For example, if the smallest paver joints are 2 mm wide, use sand 2 mm and smaller in particle size. If C 33 sand is used for joint sand, extra effort may be required in sweeping material and compacting the pavers in order to completely fill the joints.

35 to 55

12 to 25

0 to 8*

2.05 **BASE AGGREGATE**

No. 4 (4.75 mm)

No. 30 (600 µm)

No. 200 (75 µm)

Provide Base Aggregate materials conforming to ASTM D 2940 and gradation Α. requirements as presented in Table 3.

BASE AGGREGATE GRADATION REQUIREMENTS		
ASTM	D 2940	
Sieve Size	Percent Passing	
2 in (50 mm)	100	
1-1/2 in (37.5 mm)	95 to 100	
3/4 in (19 mm)	70 to 92	
3/8 in (9.5 mm)	50 to 70	

TABLE 3

In order to prevent damage by frost heaving, it may be necessary to limit the percentages of material passing the No. 200 sieve to less than shown in the tables.

2.06 SUBBASE

See Section 312000 - Earthmoving-Excavation Α.

2.07 GEOTEXTILE

- A. Provide Geotextile material conforming to the following performance characteristics, measured per the test methods referenced:
 - 1. 4 oz., nonwoven needle punched geotextile composed of 100% polypropylene staple fibers that are inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.
 - 2. Grab Tensile Strength: ASTM D 4632: 115 lbs.
 - 3. Grab Tensile Elongation: ASTM D 4632: 50%
 - 4. Trapezoidal Tear: ASTM D 4533: 50 lbs.
 - 5. Puncture: ASTM D 4833: 65 lbs.
 - 6. Apparent Opening Size: ASTM D 4751: 0.212 mm, 70 U.S. Sieve
 - 7. Permittivity: ASTM D 4491: 2.0 sec -1
 - 8. Flow Rate: ASTM D 4491: 140 gal/min/s.f.
- B. As supplied by Unilock: (12560 Sheets Rd, Rittman, OH 44270) Contact: Phil Austin Office Phone: (330) 927-4000 Mobile Phone: (412) 651-7684
 - 1. Carthage Mills FX-40HS
 - 2. U.S. Fabrics US 115NW
 - 3. Mirafi 140N
- 2.08 EDGE RESTRAINTS
 - A. Concrete Edge Restraint as indicated.
 - B. Plastic and Metal Edge Restraints:
 - 1. Pave Tech
 - a. Material Type: Plastic
 - b. Model No.: Pave Edge Rigid, Pave Edge Flexible, Pave Edge Industrial
 - 2. Snap Edge
 - a. Material Type: Plastic
 - b. Model No.: One Piece Edging, 96 inches
 - 3. Permaloc
 - a. Material Type: Aluminum
 - b. Model No.:

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas indicated to receive paving for compliance with requirements for installation tolerances and other conditions affecting performance for the following items before placing the Concrete Pavers.
 - 1. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.
 - 2. Verify that Geotextiles, if applicable, have been placed according to drawings and specifications.
 - 3. Verify that the Base Aggregate materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.
 - 4. Provide written density test results for soil subgrade, Base Aggregate materials to the Owner, General Contractor and paver installation subcontractor.
 - 5. Verify location, type, and elevations of edge restraints, concrete curbing, concrete collars around utility structures, and drainage inlets.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 1. Beginning of Bedding Sand and Concrete Paver installation signifies acceptance of Base and edge restraints.

3.02 PREPARATION

- A. Verify that the subgrade soil is free from standing water.
- B. Stockpile Setting Bed Sand, Joint Sand, Base Aggregate materials such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.
- C. Remove any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities before placing the Geotextile and Base Aggregate materials.
- D. Keep area where pavement is to be constructed free from sediment during entire job. Remove and replace all Geotextile, Joint Sand, Setting Bed Sand, Base Aggregate materials contaminated with sediment with clean materials.
- E. Complete all subdrainage of underground services within the pavement area in conjunction with subgrade preparation and before the commencement of Base Aggregate construction.
- F. Prevent to damage underdrain pipes, overflow pipes, observation wells, or inlets and other drainage appurtenances during installation. Report all damage immediately.
- G. Compact soil subgrade uniformly to at least 95 percent of Standard Proctor Density per ASTM D 698 for pedestrian areas. Compact soil subgrade uniformly to at least 98 percent Modified Proctor per ASTM D 1557 for vehicular areas. Stabilization of the subgrade and/or base material may be necessary with weak or saturated subgrade soils.
- H. Backfill all service trenches within the pavement area to the sub- grade level with approved material placed in uniform lifts not exceeding 4 in. (100 mm) loose thickness. Compact each lift to at least 100 percent Standard Proctor Density as specified in ASTM D 698.
- I. Trim the subgrade to within 0 to ½ in. (0 to 13mm) of the specified grades. Do not deviate the surface of the prepared subgrade by more than 3/8 in. (10mm) from the bottom edge of a 39 in. (1m) straight edge laid in any direction.
- J. Proof-roll prepared subgrade according to requirements in Division 31 Section "Earth Moving" to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting and replace with compacted backfill or fill as directed.
- K. Do not proceed with further pavement construction, under any circumstances, until the subgrade has been inspected by the Architect/Engineer.
- Note: Base compaction of the subgrade soil on the recommendations of the Design Engineer. Request the Architect/Engineer to inspect subgrade preparations, elevations and conduct density tests for conformance to specifications.
- 3.03 INSTALLATION

Α.

- EDGE RESTRAINTS
 - 1. Provide plastic or metal edge restraints as indicated.
 - a. Provide plastic or metal edge restraints along the perimeter of all paving as indicated and supported on a minimum of 6 inches (150 mm) of Base Aggregate.
 - b. Provide 10" spiral galvanized or stainless steel spike to fasten plastic edge restraint at 24 inches on center for straight sections and 12 inches on center for curved sections.
- B. GEOTEXTILES
 - 1. Provide separation geotextile on bottom and sides of prepared soil subgrade. Secure in place to prevent wrinkling or folding from equipment tires and tracks.
 - 2. Overlap ends and edges a minimum of 18 in. (450 mm) in the direction of drainage.

- C BASE AGGREGATE
 - 1. Provide the Base Aggregate material in uniform lifts not exceeding 6 in. (150 mm) over the compacted Subgrade material and compact to at least 100 percent Standard Proctor Density as per ASTM D 698.
 - 2. Compact the Base Aggregate material with at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 ton vibratory roller until there is no visible movement. Do not crush aggregate with the roller.
 - 3. Tolerance: Do not exceed the specified surface grade of the compacted Base Aggregate material more than ±3/8 in. (10 mm) over a 10 ft. (3 m) long straightedge laid in any direction.
 - 4. Compact and grade the upper surface of the base sufficiently to prevent infiltration of the bedding sand into the base both during construction and throughout its service life. Blend segregated areas of the granular base by the application of crushed fines that have been watered and compacted into the surface.
- D SETTING BED SAND
 - 1. Provide, spread and screed Setting Bed Sand evenly over the compacted Base Aggregate course.
 - a. Protect screeded Setting Bed Sand from being disturbed by either pedestrian or vehicular traffic.
 - b. Screed only the area which can be covered by pavers in one day.
 - c. Do not use Setting Bed Sand material to fill depressions in the base surface.
 - 2. Keep moisture content constant and density loose and constant until Concrete Pavers are set and compacted.
 - 3. Screed Setting Bed Sand using either an approved mechanical spreader (e.g.: an asphalt paver) or by the use of screed rails and boards. Maintain in a loose condition slightly ahead of the paving units and fully protect against incidental compaction following screeding. Loosen compacted sand by rain or screeded sand left overnight before further paving units are placed.
 - 4. Inspect the Setting Bed Sand course prior to commencing the placement of the Concrete Pavers. Acceptance of the Setting Bed Sand occurs with the initiation of Concrete Paver placement.
- E CONCRETE PAVERS
 - 1. Replace Concrete Pavers with chips, cracks, voids, discolorations, and other defects that might be visible in finished work.
 - 2. Mix Concrete Pavers from a minimum of three (3) bundles simultaneously drawing the paver vertically rather than horizontally, as they are placed, to produce uniform blend of colors and textures. (Color variation occurs with all concrete products. This phenomenon is influenced by a variety of factors, e.g. moisture content, curing conditions, different aggregates and, most commonly, from different production runs.By installing from a minimum of three (3) bundles simultaneously, variation in color is dispersed and blended throughout the project).
 - 3. Exercise care in handling face mix concrete pavers to prevent surfaces from contacting backs or edges of other units.
 - 4. Provide Concrete Pavers using laying pattern as indicated. Adjust laying pattern at pavement edges such that cutting of edge pavers is minimized. Cut all pavers exposed to vehicular tires no smaller than one-third of a whole paver.
 - 5. Use string lines or chalk lines on Setting Bed Sand to hold all pattern lines true.
 - 6. Set paver surface elevation a minimum of 3 mm (1/8 inch) to a maximum of 6 mm (1/4 inch) above adjacent drainage inlets, concrete collars or channels (provided the change in slope does not impede or alter the drainage or direction of flow).
 - 7. Place units hand tight against spacer bars. Adjust horizontal placement of laid pavers to align straight.
 - a. When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.
 - 8. Provide space between paver units of 1/32 in. (1 mm) wide to achieve straight bond lines.
 - Prevent joint (bond) lines from shifting more than ±1/2 in. (±13 mm) over 50 ft. (15 from string lines.

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- 10. Fill gaps between units or at edges of the paved area that exceed 3/8 inch (10 mm) withpieces cut to fit from full-size unit pavers.
- 11. Cut Concrete Pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoiningwork neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
- 12. Prevent all traffic on installed Concrete Pavers until Joint Sand has been vibrated into joints. Keep skid steer and forklift equipment off newly laid Concrete Pavers that have not received initial compaction and Joint Sand material.
- 13. Vibrate Concrete Pavers into leveling course with a low-amplitude plate vibrator capable of a to 5000-lbf (22-kN) compaction force at 80 to 90 Hz. Perform at leastthree passes across paving with vibrator. Vibrate under the following conditions:
 - a. After edge pavers are installed and there is a completed surface or before surface is exposed to rain.
 - b. Compact installed Concrete Pavers to within 6 feet (2 meters) of the laying face before ending each day's work. Cover Concrete Pavers that have not been compacted and leveling course on which pavers have not been placed, with nonstaining plastic sheets to prevent Setting Bed Sand from becoming disturbed.
- 14. Protect face mix Concrete Paver surface from scuffing during compaction byutilizing a urethane pad.
- 15. Remove any cracked or structurally damaged Concrete Pavers and replace with new units prior to installing Joint Sand material.
- F. JOINT SAND
 - 1. Provide, spread and sweep dry Joint Sand into joints immediately after vibrating pavers into Setting Bed Sand course until full. Vibrate pavers and add Joint Sand material until joints are completely filled, then remove excess material. This will require at least 4 passes with a plate compactor.
 - 2. Leave all work to within 3 ft. (1 m) of the laying face fully compacted with sand-filled joints at the completion of each day.
 - 3. Remove excess Joint Sand broom clean from surface when installation is complete.
 - 4. Polymeric Joint Sand
 - a. Install Polymeric Joint Sand per manufacturers recommended instructions.
- 3.04 FIELD QUALITY CONTROL
 - A. Verify final elevations for conformance to the drawings after sweeping the surface clean.
 - Prevent final Concrete Paver finished grade elevations from deviating more than ±3/8 in. (±10 mm) under a 10 ft (3 m) straightedge or indicated slope, for finished surface of paving.
 - B. Lippage: Paver-to-Paver Lippage:
 - 1. No greater than 3 mm (1/8 inch) difference in height between adjacent pavers.

3.05 REPAIRING, CLEANING AND SEALING

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
- B. Cleaning: Remove excess dirt, debris, stains, grit, etc. from exposed paver surfaces; wash and scrub clean.
 - 1. Clean Concrete Pavers in accordance with the manufacturer's written recommendations.
- 3.06 PROTECTION
 - A. Protect completed work from damage due to subsequent construction activity on the site.

END OF SECTION

McDowell County Board of Education McDowell County Outdoor Classrooms

Architectural Products

www.unilock.com 1-800-UNILOCK

Notes:

AutoCAD® hatch pattern files can be downloaded from www.unilock.com for use in architectural drawings.

Some patterns may not necessarily reflect the percentages of stone sizes within a particular bundle configuration. In some cases you may have extras in one or more of the sizes. This must be accounted for in your planning and design. ADDED: Addendum #1 August 5, 2021 Page Page 11 of 12

Brussels Block®

Pattern AH

14% I	Half S	tone		
29% \$	Stand	ard		
57% 2	XL			





PAVER PATTERN NOT TO SCALE

SECTION 321813 - SYNTHETIC GRASS SURFACING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes synthetic grass surfacing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at the Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For synthetic grass surfacing.
 - 1. Include sections and details.
 - 2. Show locations of seams and method of seaming.
 - 3. Show layout of game lines, numbers, and letters. Indicate application method of each line and marking.
- C. Samples: For each type of synthetic grass surfacing.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- 1.6 QUALITY ASSURANCE
 - A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace synthetic grass surfacing that fails in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 8 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Turf Fabric: Turf fabric tested according to the following methods, with additional test method conditions for each method according to ASTM F1551.
 - 1. Tuft Bind: Not less than 8 lbf (36 N) according to ASTM D1335.
 - 2. Breaking Strength: Minimum 200 lbf (890 N) in warp direction and minimum 200 lbf (890 N) perpendicular to warp direction, according to ASTM D5034.
- B. Synthetic Grass Surfacing: Assembly tested according to the following methods, with additional test method conditions for each method according to ASTM F1551.
- C. Permeability: 720 in./h (18,288 mm/h) of rainfall capacity according to ASTM F2898 or EN 15330-1.

2.2 SYNTHETIC GRASS SURFACING

- A. Synthetic Grass Surfacing: Complete surfacing system, consisting of synthetic yarns bound to water-permeable backing and infill indicated, suitable for playgrounds.
- B. Synthetic Grass Surfacing: Assembly tested according to the following methods, with additional test method conditions for each method according to ASTM F1551.
- C. Backing: Manufacturer's standard woven or nonwoven polypropylene primary backing with urethane-coated secondary backing; provide perforations or drainage channels sufficient to meet permeability indicated.
- D. Infill: Manufacturer's standard sand infill.

2.3 MATERIALS

- A. Sand Infill: Uniformly sized silica sand free of silts, clays, and contaminants, and of subangular or rounder shape according to ASTM F1632; mesh size as recommended by synthetic grass surfacing manufacturer.
- B. Seam Adhesive: One- or two-part urethane, recommended or approved by synthetic grass surfacing manufacturer, and suitable for ambient conditions at time of installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine base and other conditions, with Installer present, for compliance with requirements for installation tolerances, permeability, and other conditions affecting performance of the Work.

3.2 INSTALLATION

- A. Avoid disturbance of base during installation of turf fabric.
- B. Roll out turf fabric and allow to relax at least four hours prior to seaming.
- C. Provide seams flat and snug, with no gaps or fraying. Remove yarns that are trapped within seams. Attach turf fabric to perimeter restraint system as recommended by the manufacturer.
- D. Repair loose seams and bubbles formed due to expansion of turf fabric prior to installation of infill.
- E. Evenly broadcast and groom infill by machine in proportions and depth after settling as recommended by the manufacturer, and to meet indicated performance requirements. Rake fibers trapped by infill to surface.

3.3 DEMONSTRATION

A. Train Owner's maintenance personnel in proper maintenance procedures for synthetic grass surfacing.

END OF SECTION 321813

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PLANT SCHEDULE



GROUNDCOVER

NOTES:

- MATERIAL.
- HARDWOOD MULCH.
- SIZE.
- GRASS SEED MIXTURE.

DULE		
BOTANICAL / COMMON NAME	<u>CONT</u>	<u>QTY</u>
CERCIS CANADENSIS `FOREST PANSY` / FOREST PANSY REDBUD	2-2.5" CAL	1
<u>BOTANICAL / COMMON NAME</u> MISCANTHUS SINENSIS `GRACILLIMUS` / MAIDEN GRASS	<u>SIZE</u> 3 GAL	QTY 3
DOUBLE SHREDDED HARDWOOD MULCH	CU YD	1

1. REFER TO LANDSCAPE DETAILS FOR PROPER PLANTING OF ALL PLANT

2. LANDSCAPE BEDS TO RECEIVE 3" OF DYED BROWN DOUBLE SHREDDED

3. PLANTS ARE DRAWN AT DESIRED MAINTAINED SIZE. PLANT PLACEMENT SHOULD REFLECT PLAN ALLOWING PLANTS SPACE TO GROW TO DESIRED MAINTAINED

4. ALL AREAS DISTURBED BY CONSTRUCTION NOT COVERED WITH MULCH AS A GROUNDCOVER ARE TO BE PERMANENTLY STABILIZED WITH THE SPECIFIED







PLANT SCHEDULE



GROUNDCOVER

NOTES:

- MATERIAL.
- HARDWOOD MULCH.
- SIZE.

DULE		
BOTANICAL / COMMON NAME	<u>CONT</u>	<u>QTY</u>
CERCIS CANADENSIS `FOREST PANSY` / FOREST PANSY REDBUD	2-2.5" CAL	1
<u>BOTANICAL / COMMON NAME</u> MISCANTHUS SINENSIS `GRACILLIMUS` / MAIDEN GRASS	<u>SIZE</u> 3 GAL	<u>QTY</u> 8
DOUBLE SHREDDED HARDWOOD MULCH	<u>UNIT</u> CU YD	<u>QTY</u> 2

1. REFER TO LANDSCAPE DETAILS FOR PROPER PLANTING OF ALL PLANT

2. LANDSCAPE BEDS TO RECEIVE 3" OF DYED BROWN DOUBLE SHREDDED

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BOTANICAL / COMMON NAME	SIZE	<u>QTY</u>
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THUJA STANDISHII X PLICATA `GREEN GIANT` / GREEN GIANT ARBORVITAE EUONYMUS ALATUS 'COMPACTUS'/DWARD BURNING BUSH	6'-7' 3 GAL	6 12
DOUBLE SHREDDED HARDWOOD MULCH	<u>UNIT</u> CU YD	<u>QTY</u> 2
	ULE BOTANICAL / COMMON NAME MISCANTHUS SINENSIS 'GRACILLIMUS' / MAIDEN GRASS THUJA STANDISHII X PLICATA 'GREEN GIANT' / GREEN GIANT ARBORVITAE EUONYMUS ALATUS 'COMPACTUS'/DWARD BURNING BUSH DOUBLE SHREDDED HARDWOOD MULCH	YYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY

1. REFER TO LANDSCAPE DETAILS FOR PROPER PLANTING OF ALL PLANT

2. LANDSCAPE BEDS TO RECEIVE 3" OF DYED BROWN DOUBLE SHREDDED

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PLANT SCHEDULE

GRASSES GROUNDCOVER

NOTES:

- MATERIAL.
- HARDWOOD MULCH.
- SIZE. GRASS SEED MIXTURE.

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BOTANICAL / COMMON NAME	SIZE	QTY	
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DOUBLE SHREDDED HARDWOOD MULCH	CU YD	3	K ww

1. REFER TO LANDSCAPE DETAILS FOR PROPER PLANTING OF ALL PLANT

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PLANT SCHEDULE



GROUNDCOVER

NOTES:

- MATERIAL.
- HARDWOOD MULCH.
- SIZE.

DULE		
BOTANICAL / COMMON NAME	<u>CONT</u>	<u>QTY</u>
CERCIS CANADENSIS `FOREST PANSY` / FOREST PANSY REDBUD	2-2.5" CAL	1
<u>BOTANICAL / COMMON NAME</u> MISCANTHUS SINENSIS `GRACILLIMUS` / MAIDEN GRASS	<u>SIZE</u> 3 GAL	<u>QTY</u> 7
	<u>UNIT</u>	<u>QTY</u>
DOUBLE SHREDDED HARDWOOD MULCH	CU YD	2

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-SALVAGEABLE ITEMS SHALL FIRST BE OFFERED TO THE OWNER. SALVAGEABLE ITEMS THAT ARE NOT RETAINED BY THE OWNER SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF OFF SITE.

-REMOVE ALL TRASH, PAINT PARTICLES, AND OTHER DEBRIS FROM ALL BUILDINGS AND FACILITY -FIELD VERIFY EXISTING CONDITIONS AS NECESSARY TO FULFILL THE INTENT/SCOPE OF THE

NEW CONSTRUCTION KEYNOTES DESCRIPTION STONE PAVERS WOOD BENCH MULCH BED W/ FOUNTAIN GRASSES - 340 SP WALL MOUNT/FREE STANDING SHADE STRUCTURE. PROVIDE LAWRENCE FABRIC & METAL & TRUCTURES OR APPROVED EQUIVALENT. ELEMENTARY VISUAL DISPLAY BOARD; SEE DETAILS ON SHEETS C.11 & C.12 DECORATIVE FENDE - 175-7" ARTIFICIAL TURF - 1398.58 SF 13 ULTRASITE 8' DOUBLE SIDED EXTRA HEAVY DUTY ADA TABLE, DIAMOND 2384-V8 OR APPROVED EQUIVALENT CONCRETE SLAB - 505 SF FOUNTAIN GRASSES ULTRASITE 358 ROUND TABLE, PERFORATED 358-RDP OR APPROVED EQUIVALENT.

ULTRASITE 358 PRESCHOOL ROUND TABLE, PERFORATED 358PS-RDP OR APPROVED EQUIVALENT.

1. POWER ALL OUTLETS AND LIGHTS FROM NEAREST 120V, 20AMP, GFCI CIRCUIT BREAKER.

2. OUTLET SHALL BE MOUNTED TO INSIDE OF DISPLAY BOARD POST, BEHIND THE DISPLAY BOARD.

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-CONTRACTOR TO COORDINATE DEMOLITION WITH ALL OTHER SHEETS AND DOCUMENTS. -DIMENSIONS GIVEN AS REFERENCE ONLY. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AS NECESSARY TO FULFILL THE INTENT/SCOPE OF THE WORK PRIOR TO COMMENCING THE WORK. -PROTECT ALL ITEMS TO REMAIN - PATCH AND REPAIR ALL ITEMS AND FINISH TO REMAIN IF DAMAGED. VOIDS OR DAMAGES TO EXISTING STRUCTURES, FINISHES, AND/OR SITE ITEMS TO REMAIN MUST BE REPAIRED TO MATCH OR EXCEED EXISTING CONDITIONS UNLESS OTHERWISE NOTED. -COORDINATE ALL EXISTING BUILDING AND SITE UTILITIES WITH ALL DOCUMENTS. DISRUPTION OF ANY

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-REMOVE ALL TRASH, PAINT PARTICLES, AND OTHER DEBRIS FROM ALL BUILDINGS AND FACILITY

-FIELD VERIFY EXISTING CONDITIONS AS NECESSARY TO FULFILL THE INTENT/SCOPE OF THE CONSTRUCTION DOCUMENTS.

NEW CONSTRUCTION KEYNOTES
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USED
.CH BED W/ FOUNTAIN GRASSES - 145 SF
A MOUNT/FREE STANDING SHADE STRUCTURE. PROVIDE LAWRENCE FABRIC &
MENTARY VISUAL DISPLAY BOARD; SEE DETAILS ON SHEETS C.11 & C.12
OPATIVE-FENCE-17355 A A A A
ICRETEBENCH Y Y Y Y Y Y
IFICIAL TURF - 328.19 SF
USED
RASITE 8' DOUBLE SIDED EXTRA HEAVY DUTY ADA TABLE, DIAMOND 2384-V8 OR ROVED EQUIVALENT.
ICRETE SLAB - 588 SF
E
INTAIN GRASSES
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RASITE 238 EXTRA HEAVY DUTY TABLE 238-V8U OR APPROVED EQUIVALENT
RASITE 358 ROUND TABLE, PERFORATED 358-RDP OR APPROVED EQUIVALENT

ULTRASITE 358 PRESCHOOL ROUND TABLE, PERFORATED 358PS-RDP OR APPROVED EQUIVALENT

1. POWER ALL OUTLETS AND LIGHTS FROM NEAREST 120V, 20AMP, GFCI CIRCUIT BREAKER.

2. OUTLET SHALL BE MOUNTED TO INSIDE OF DISPLAY BOARD POST, BEHIND DISPLAY BOARD.

3. ALL CONDUIT SHALL BE 3/4" WITH 2-#12 WIRES AND 1-#12 GROUND.

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GENERAL NOTES:

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-REMOVE ALL TRASH, PAINT PARTICLES, AND OTHER DEBRIS FROM ALL BUILDINGS AND FACILITY

-FIELD VERIFY EXISTING CONDITIONS AS NECESSARY TO FULFILL THE INTENT/SCOPE OF THE

ULTRASITE 358 ROUND TABLE, PERFORATED 358-RDP OR APPROVED EQUIVALENT. ULTRASITE 358 PRESCHOOL ROUND TABLE, PERFORATED 358PS-RDP OR APPROVED EQUIVALENT.

1. POWER ALL OUTLETS AND LIGHTS FROM NEAREST 120V, 20AMP, GFCI CIRCUIT BREAKER.

2. OUTLET SHALL BE MOUNTED TO INSIDE OF DISPLAY BOARD POST, BEHIND THE DISPLAY BOARD.

3. ALL CONDUIT SHALL BE 3/4" WITH 2-#12 WIRES AND 1-#12 GROUND.

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NEW CONSTRUCTION KEYNOTES
DESCRIPTION
TONE PAVERS
OT USED
ULCHBED W/ FOUNTAIN GRASSES - 250 SF
ALL MOUNT/FREE STANDING SHADE STRUCTURE. PROVIDE LAWRENCE FABRIC&
LEMENTARY VISUAL DISPLAY BOARD; SEE DETAILS ON SHEETS C.11 & C.12
ECORATIVE EENCE
ONGRETE BENGH Y Y Y Y Y Y Y
RTIFICIAL TURF
OT USED
LTRASITE 8' DOUBLE SIDER EXTRA HEAVY DUTY ADA TABLE. DIAMOND 238H-V8 OR
ONCRETE SLAB
REE
OUNTAIN GRASSES
LTRASTTE 238 BXTRA HEAVY DUTY TABLE 238-V8UVOR APPROVED EQUIVALENT
ALL-MOUNTED HEAVY-DUTY ALUMINUM SIGN, 80 MIL. WITH A DRY ERASE COATING Y IMAGE 360 OR APPROVED FOUIVALENT
CAL NOTES:

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I REVISED LAYOUT AND NOTES.							DESCRIPTION
08/05/202							BY DATE
~							NO.
MCDOWELL COUNTY OUTDOOR CLASROOMS RIVER VIEW HIGH BRADSHAW, WV 07/09/2021 CONSTRUCTION DOCUMENTS							
DR. CH API PRO	DRAWN: JSA DATE: 06/22/21 CHECKED: AJC DATE: 06/22/21 APPROVED: AJC DATE: 06/22/21 PROJECT No. 060-10227						
VIEW HIGH SHEET NO. A5.00							