SECTION 00005
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BAS – HAWKINS ELEMENTARY ATHLETIC FIELDS

END OF SECTION

SECTION 003121
SITE SURVEY INFORMATION

PART 1 - GENERAL

1.1 SURVEY INFORMATION

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.

B. The Site Survey, completed by Desine, Inc. dated, March 13, 2020, was used for the bases of design and, is available as an appendix to this Document.

END OF SECTION

SECTION 024119
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected site elements.
2. Salvage of existing items to be reused or recycled.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.3 FIELD CONDITIONS

A. District will occupy portions of building adjacent to selective demolition area. Conduct selective demolition so District's operations will not be disrupted.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by District before start of the Work.
2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and District. Hazardous materials will be removed by District under a separate contract.

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

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

3.2 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. 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.
2. Maintain adequate ventilation when using cutting torches.
3. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
4. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
6. Dispose of demolished items and materials promptly.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition, cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.3 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site.

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.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

3.4 CLEANING

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

END OF SECTION

SECTION 042200 -
CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Steel reinforcing bars.

1.2 REFERENCES

A. ACI 530/ASCE 5/TMS 402 Building Code Requirements for Masonry Structures.

B. ACI 530.1/ASCE 6/TMS 602 Specifications for Masonry Structures.

C. ANSI/ASTM A82 Cold Drawn Steel Wire for Concrete Reinforcement.

D. ASTM A307 Carbon Steel Externally Threaded Standard Fasteners.

E. ASTM C90 Load Bearing Concrete Masonry Units.

F. ASTM C91 Masonry Cement

G. ASTM C94 Ready Mixed Concrete

H. ASTM C144 Aggregate for Masonry Mortar

I. ASTM C150 Portland Cement

J. ASTM C207 Hydrated Lime for Masonry Purposes

K. ASTM C270 Mortar for Unit Masonry

L. ASTM C387 Packaged, Dry, Combined Materials, for Mortar and Concrete

M. ASTM C404 Aggregates for Masonry Grout

N. ASTM C476 Grout for Masonry IMIAWC International Masonry Industry All Weather Council:

Recommended Practices and Guide Specifications for Clod Weather Masonry Construction

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of product. For masonry units, include data on material properties material test reports substantiating compliance with requirements.

1.5 QUALITY ASSURANCE

A. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.

1. Build sample panels for each type of exposed unit masonry construction, typical exterior wall, typical interior wall, typical exterior and interior walls in sizes approximately 16 inches long by 24 inches high**.**

1.6 FIELD CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

B. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated.

C. CMUs: ASTM C90.

1. Masonry for the load-bearing wythe of all load-bearing walls and all exterior walls shall have a masonry compressive strength, f'm, of 2500 psi
2. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3750 psi for load-bearing walls, and 1900 psi for all other walls.
3. Density Classification: Normal weight.

2.3 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I, gray color.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91/C91M, Type S.

E. Aggregate for Mortar: ASTM C144, Standard masonry type.

1. White-Mortar Aggregates: Natural white sand or crushed white stone.
2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Aggregate for Grout: ASTM C404.

G. Cold-Weather Admixture: Non-chloride, non-corrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.

I. Water: Clean and Potable.

2.4 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A99

1. Exterior Walls: Hot-dip galvanized carbon steel.
2. Wire Size for Side Rods: 9 gauge (0.148-inch) diameter.
3. Wire Size for Cross Rods: 9 gauge (0.148-inch) diameter.

4. Spacing of Cross Rods: Not more than 16 inches o.c.
5. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

2.5 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
2. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
3. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

B. Partition Top Anchors: 0.105-inch- thick metal plate with a 3/8-inch- diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

C. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.

1. Corrosion Protection: Unless otherwise required, protect joint reinforcement, ties and anchors from corrosion by galvanizing in conformance with Sections 1.13.4.3 of ACI 530/ASCE 5/TMS 402 and Section 2.4 F of ACI 530.1/ASCE 6/TMS 602.

2.6 FLASHING

A. Flexible Flashing: Use one of the following unless otherwise indicated:

1. Copper-Laminated Flashing: 5-oz./sq. ft. copper sheet bonded between two layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
2. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.030 inch.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

A. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

B. Drilled in Concrete Anchors (DCA’s) for grouted masonry. Provide stainless steel or galvanized to G185 coating per ASTM A153 for DCA’s in contact with preservative treated wood.

C. Drilled in Concrete Anchors (DCA’s) for hollow masonry. Provide stainless steel or galvanized to G185 coating per ASTM A153 for DCA’s in contact with preservative treated wood.

D. Control Joints: Form with preformed rubber or PVC joint devices.

2.8 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime or masonry cement mortar unless otherwise indicated.
3. For exterior masonry, use portland cement-lime or masonry cement mortar.
4. For reinforced masonry, use portland cement-lime or masonry cement mortar.
5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.

1. For masonry below grade or in contact with earth, use Type S.
2. For reinforced masonry, use Type S.
3. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.

D. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
3. Provide grout with a slump of 8 to 10 inches as measured according to ASTM C143/C143M.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.2 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.3 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

F. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. Bed face shells in mortar and make head joints of depth equal to bed joints.
2. Bed webs in mortar in all courses of piers, columns, and pilasters.
3. Bed webs in mortar in grouted masonry, including starting course on footings.
4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.

B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.5 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

3.6 FLASHING

A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

2. At lintels, extend flashing a minimum of 8 inches into masonry at each end. At heads and sills, extend flashing 8 inches at ends and turn up not less than 2 inches to form end dams.
3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
4. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.

C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

3.7 WEEPS

A. Provide weep holes at 24” on center horizontally above through-wall flashing and at bottom of walls.

B. Weep holes and cavity vents shall consist of un-mortared, open head joints with honeycomb type inserts.

C. The weep hole shall extend through the lowest bed joint to the top side of the through-wall flashing.

D. Provide cavity vents at the top of each cavity space at 48” on center horizontally.

3.8 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches.

3.9 FIELD QUALITY CONTROL

A. Reference structural drawings for additional Special Inspection requirements as designated per Chapter 17 of the Michigan Building Code.

B. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Owners expense.

C. Inspections: Special inspections according to Level C in TMS 402/ACI 530/ASCE 5.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

D. Testing Prior to Construction: One set of tests.

E. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

F. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.

G. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.

H. Mortar Test (Property Specification): For each mix provided, according to ASTM C780. Test mortar for compressive strength.

I. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

J. Prism Test: For each type of construction provided, according to ASTM C1314 at 28 days.

1.2 REPAIRING, POINTING, AND CLEANING

A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
2. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

END OF SECTION

SECTION 116833 – BALL FIELD PADDING

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.

1.02 RELATED WORK

A. Examine contract documents for requirements that affect work of this section. Other specification divisions and sections that directly relate to the work of this section include, but are not limited to:

1. Division 03 – Concrete; Sections: Cast-in-Place Concrete

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. National Collegiate Athletic Association (NCAA)
3. International Association of Athletics Federations (IAAF)
4. ASTM International
5. American Sports Builders Association (ASBA) Manufacturers Data and Recommended Installation Requirements

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 Architects or Owners 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 MANUFACTURERS

A. BaseZone® Field Wall Padding Protective Padding and Accessories, basis of design.
B. Humphrys Cover Sports
C. Putterrrman Athletics
D. Field Wall Pads

2.02 WALL PADDING COMPONENTS: BaseZone® Field Wall Padding

A. BaseZone® Field Wall Padding:
1. 3” Thick High Impact Polyurethane Foam
2. 5/8” Square Edge AdvanTech® Water Resistant Sheathing
3. Panel, All Sides Stained and Sealed with Exterior Grade Finish
4. 18 oz. Per Square Yard EcoGuard® Extruded Vinyl Manufactured Using 33% Reprocessed Vinyl, High UV Resistance and Five (5) Year Limited Fade Warranty, Various Standard Colors Available
5. Fabric: 1000 Denier Polyester Basic Fabric
6. Tear Strength Test: Warp 78 lbs., Fill 65 lbs.
7. Tensile Strength: Warp 224 lbs., Fill 220 lbs.
8. Weft Insertion: 9 x 9, Superior UV Inhibitors
9. Cold Crack: Minus 20° Fahrenheit
10. Vinyl Seams Double Stitched Using 6 lb. Bonded Polyester Black Thread
11. Stainless Steel Assembly Hardware
12. Standard Concrete Wall with Z-Clip and/or Chain Link with Bolt and Plate Attachment Methods Available.

2.03 CHAIN LINK TOP RAIL PADDING

A. 18 oz. Per Square Yard EcoGuard® Extruded Vinyl Manufactured Using 33% Reprocessed Vinyl, High UV Resistance and Five (5) Year Limited Fade Warranty, VariouS Standard Colors Available
1. Fabric: 1000 Denier Polyester Basic FabriC
2. Tear Strength Test: Warp 78 lbs., Fill 65 lbs.
3. Tensile Strength: Warp 224 lbs., Fill 220 lbs.
4. Weft Insertion: 9 x 9, Superior UV Inhibitors
5. Cold Crack: Minus 20° Fahrenheit
6. Vinyl Seams Double Stitched Using 6 lb. Bonded PolyesteR Black Thread
7. 3” Thick High Impact Polyurethane Foam
8. Two (2) – 1.5” Wide Vinyl Flaps with #2 Stainless Steel Grommets Factory Installed Every 12” on Center for Securement Purposes
9. Attached to Rail Using 14”L Nylon Zip Ties with a 50 lb.

PART 3 - EXECUTION

3.01 INSTALLATION OF EQUIPMENT

A. All BaseZone® Field Wall Padding Protective Padding and Accessories shall be installed as recommended per manufacturer's written instructions and as indicated on the drawings. Installer should have a minimum of five (5) protective padding installations or similar experience in the previous three (3) years.

END OF SECTION

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.

1.02 RELATED WORK

A. Examine contract documents for requirements that affect work of this section. Other specification divisions and sections that directly relate to the work of this section include, but are not limited to:

1. Division 03 – Concrete; Sections: Cast-in-Place Concrete
2. Division 31 – Earthwork; Sections: Excavation and Backfill

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. National Collegiate Athletic Association (NCAA)
3. International Association of Athletics Federations (IAAF)
4. American Sports Builders Association (ASBA)
5. Manufacturers Data and Recommended Installation Requirements

1.04 SUBMITTALS

A. Manufacturers Product Data, Shop Drawings

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

2. Provide drawings of the manufacturers recommended installation and foundation requirements prior to actual field installation work, for Architects or Owners representatives review.

3. Stamped and Sealed Drawings and Calculations by a Licensed Professional Engineer of Record in the State of Project Location.

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 MANUFACTURERS

A. Sportsfield Specialties, Inc., GD8X40 - GameShade® Dugout 8'W x 24'L Basis of design.Delhi, NY
B. Beacon Athletics, Middleton, WI
C. Porter Corp, Polygon LinkUp Dugouts, Holland, MI

D. DESIGN CRITERIA:

1. Current Michigan Building Code: ASCE 7-10
2. Maximum Wind Speed Rating: 140mph, Exposure Category C
3. Maximum Ground Snow Load: 30psf
4. Roof Pitch: Refer to drawings.

E. COMPONENTS:

1. Overall Dimensions: 8'W x 32'L
2. Structural Columns Fabricated of: 3-1/2" x 3-1/2" x 3/16" (0.1875") Structural Steel Tube with Factory Pre-Drilled 9" x 9" x 5/8" (0.625") A36 Steel Base Mounting Plates and 9" x 9" x 5/8" (0.625") A36 Steel Roof and Column Cap Plates
3. Fully Welded Construction
4. Maximum Allowable Spacing Between Structural Steel Columns is Fifteen (15') On-Center
5. Roof Frame Fabricated of: 5" x 2" x 3/16" (0.1875") Structural Steel Rectangular Perimeter, Transverse, and Longitudinal Roof Tubes
6. Fully Welded Construction
    a. Structural Steel Columns and Roof Frame Receive a Powder Coated Primer and Coated Finish, Various Standard and Custom Colors Available
    b. Roofing Material is 29 Gauge, Classic Rib® Style Corrugated Metal with J-Channel Drip Cap Installed on Front and Sides, Various Standard Paint Finish Colors Available
    c. Structural Columns Attached to Roof Structure with Galvanized Hardware
    d. Includes Carbon Steel Anchoring Hardware, Epoxy and Lifting Eye Bolts
    e. Model Specific Hardware Kit and Installation Instructions

PART 3 EXECUTION

3.01 INSTALLATION OF EQUIPMENT

A. All Dugouts shall be installed as recommended per manufacturer's written instructions and as indicated on the drawings. Concrete anchoring foundations to be determined by others based on local soil conditions and building codes. Installer should have a minimum of five (5) Dugout installations or similar experience in the previous three (3) years.

END OF SECTION

SECTION 311000
SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees and grass to remain.
2. Removing existing trees, shrubs, groundcovers, plants, and grass.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements, including pavement.
6. Disconnecting and capping or sealing site utilities.
7. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: A. Contact local “Miss Dig” by phone at 811 or 800-482-7171 or via the web at either elocate.missdig.org for a single address or rte.missdig.org, a minimum of 72 hours (excluding Saturdays, Sundays and Holidays) in advance of any excavation. Request underground utilities to be located and marked within and surrounding the construction area.

D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - EXECUTION

2.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

2.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction, sediment and erosion control shown on Drawings, and a sediment and erosion control plan, specific to the site, that complies with EPA 832/R-92-005 and requirements of the Michigan Department of Management and Budget.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

2.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.

2.4 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

1. Arrange with utility companies to shut off indicated utilities.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Engineer not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Engineer’s written permission.

C. Removal of underground utilities is included in Division 02 Section Structure Demolition covering site utilities.

2.5 CLEARING AND GRUBBING

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

B. Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions, as required, to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. Removal includes digging out and off-site disposal of stumps and roots.

1. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction

2.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

2.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove debris, rock, paving and curbs at areas indicated on the drawings for removal. Neatly saw cut edges at a right angle to the surface.

C. Remove all existing pavement structure (including curbs), as shown on the drawings or in the bid form. MDOT 204.03.A2.

1. Pavement remnant limit: Remove pavement to edge or joint, where dimension is less than 3 feet.
2. Butt joint: Provide where new pavement meets existing pavement.

2.8 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

1. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.
2. The contractor shall comply with all applicable Federal, State and Local laws and ordinances regarding transportation and disposal of removed items and waste material. This shall include all M.I.O.S.H.A. regulations.
3. Continuously clean-up and remove waste materials from the project site. Do not allow waste materials to accumulate on site.

END OF SECTION

SECTION 312000
EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns and grasses, and exterior plants.
2. Excavating and backfilling for buildings and structures.
3. Drainage course for slabs-on-grade.
4. Subbase course for concrete walks.
5. Subbase and base course for asphalt paving.
6. Excavating and backfilling for utility trenches.

1.2 REFERENCES

A. MDOT – Michigan Department of Transportation, "2012 Standard Specifications for Construction".

B. ASTM - American Society of Testing Materials, latest edition.

C. Local utility standards when working within 24 inches of a utility line.

1.3 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Maximum Density: Maximum dry weight in pounds per cubic foot of a specific material.

I. Optimum Moisture: Percentage of water at maximum density.

J. Rock: All boulders or rock approximately one cubic yard or more and all solid or ledge rock, slate, shale, sandstone and other hard materials that require continuous use of pneumatic tools, heavy rippers or continuous drilling and blasting for removal. Pavements are not included.

K. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

L. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

M. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

N. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Subbase Material: Granular material MDOT 902.08, Table 902-3, Class II or IIA.

C. Base Course: For bases to be surfaced with concrete or bituminous mixtures, use Aggregate 21AA unless otherwise specified. MDOT 302.02 and 902.06.

D. Bedding Course: MDOT Class II.

E. Aggregate Surface Course:

1. Use Aggregate 21AA when the Aggregate surface course is to receive a bituminous surface at a later date. MDOT 306.02 and 902.06.
2. Use Aggregate 23A when the Aggregate Surface Course is to be constructed without a bituminous surface. MDOT 306.02 and 902.06

PART 3 - EXECUTION

3.1 PREPARATION

A. Contact local “Miss Dig” by phone at 811 or 800-482-7171 or via the web at either elocate.missdig.org for a single address or rte.missdig.org, a minimum of 72 hours (excluding Saturdays, Sundays and Holidays) in advance of any excavation.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

C. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."

D. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Site Clearing." during earthwork operations.

3.2 EXCAVATION

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: As indicated on Detail Sheet C6.0.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

3.6 SUBGRADE INSPECTION

A. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.7 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 03 Section "[Cast-in-Place Concrete."

D. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

E. Place and compact final backfill of satisfactory soil to final subgrade elevation.

3.9 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

3.10 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698 or ASTM D 1557:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
3. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.12 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 1 inch.

2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.13 SUBBASE AND BASE COURSES

A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase and base course under pavements and walks as follows:

1. Shape subbase and base course to required crown elevations and cross-slope grades.
2. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698 or ASTM D 1557.

3.14 DRAINAGE COURSE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:

1. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
2. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.15 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer..

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION

SECTION 312319 - DEWATERING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes construction dewatering.

1.2 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control ground-water flow into excavations and permit construction to proceed on dry, stable subgrades.

1.3 SUBMITTALS

A. Shop Drawings for Information: For dewatering system. Show arrangement, locations, and details of wells and well points; locations of headers and discharge lines; and means of discharge and disposal of water.

1. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with water disposal requirements of authorities having jurisdiction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.

1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site and surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.2 INSTALLATION

A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

B. Before excavating below ground-water level, place system into operation to lower water to specified levels. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed, or until dewatering is no longer required.

C. Provide an adequate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.

1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.

D. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.

1. Maintain piezometric water level a minimum of 24 inches below surface of excavation.

E. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water in a manner that avoids inconvenience to others. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

F. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to Owner.

1. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

G. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.

END OF SECTION 312319

SECTION 321313
CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

1. Walkways.

1.2 REFERENCES:

A. MDOT - Michigan Department of Transportation, “2012 Standard Specifications for Construction”.

B. ASTM - American Society of Testing Materials, latest edition.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: Provide job-mix formula prepared by independent lab or approved by MDOT a minimum of two weeks prior to placement.

C. Concrete Test Specimens: Deliver to the place of inspection and testing.

D. Concrete Test Results: For each specimen.

E. Certification of quality by producer for the following:
1. Cement
2. Aggregates
3. Curing Compound

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Plain-Steel Welded Wire Reinforcement: Conform to MDOT 905.06.

B. Concrete sidewalks and slabs: Unless otherwise specified use concrete Grade P1 or S2. Conform to MDOT 803.02, 701.02, 6 sacks per cubic yard minimum.

C. Concrete Joint Filler: Conform to MDOT 914.03 and 914.04 A.

2.2 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, with the following properties:

1. Compressive Strength (28 Days): 4000 psi.
2. Slump Limit: 4 inches plus or minus 1 inch.
3. Air Content: 6 percent plus or minus 1.5 percent.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness to match jointing of existing adjacent concrete pavement.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed pavement surfaces with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
2. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.
3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on pavement surface according to manufacturer's written instructions.

1. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
2. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing curing compound or a combination of these methods.

3.8 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch, no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.9 TESTING AND INSPECTION:

A. Observation: By Owner’s designated authorized representative.
1. Inspection of forms by Owner’s representative is required prior to pouring concrete.

B. Acceptance Testing:
1. Contractor shall employ a certified American Concrete Institute/Michigan Concrete Association Concrete Field Testing Technician.
2. Concrete:
    a. Sample: ASTM C172
    b. Frequency: Once for each 50 cubic yards, or less, of each class of concrete placed each day.
    c. One additional test cylinder will be taken during cold weather and be cured on site under the same conditions as the concrete it represents.
    d. One slump test will be taken for each set of test cylinders made.
    e. Perform following from sample:
        1) Mold three 6-inch cylinder compressive strength specimens: ASTM C31.
        2) Slump test: ASTM C143.
        3) Air test: ASTM C231.
        4) Yield test: ASTM C138.
        5) Strength test: ASTM C139.
3. If initial testing indicates nonconformance to specifications, additional testing shall be paid by Contractor. Replace nonconforming material at no additional cost.

3.10 PAVEMENT MARKING

A. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

B. Sweep and clean surface to eliminate loose material and dust.

C. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.11 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each dowel to wheel stop and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

3.12 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 321373
CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Expansion and contraction joints within cement concrete pavement.
2. Joints between cement concrete and asphalt pavement.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each type and color of joint sealant required.

C. Compatibility and Adhesion Test Reports: From sealant manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: MDOT approved.

2.2 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. Conform with MDOT Section 914.

2.3 INSTALLATION

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 in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience.

C. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

D. Install backer materials to support sealants during application and at position required to produce optimum sealant movement capability. Do not leave gaps between ends of backer materials. Do not stretch, twist, puncture, or tear backer materials. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.

E. Install sealants at the same time backings are installed to completely fill recesses provided for each joint configuration and to produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

G. 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.

END OF SECTION 321373

SECTION 323113
CHAIN LINK FENCES AND GATES

PART I - GENERAL

1.1 SUMMARY:

A. Section includes:

1. This Section includes, but is not necessarily limited to, the furnishing and installation of industrial/commercial chain link fences and gates as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.

B. Related Sections:

1. Documents affecting work of this Section include, but are not necessarily limited to:

a. General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 REFERENCES:

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:

1. ASTM A491 Specification for Aluminum-Coated Steel Chain Link Fabric.
2. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
3. ASTM F552 Standard Terminology Relating of Chain Link Fence.
4. ASTM F567 Standard Practice for Installation of Chain Link Fencing.
5. ASTM F626 Specification for Fence Fittings.
6. ASTM F900 - Standard Specification for Industrial and Commercial Swing Gates.
7. ASTM F1043 Specification for Strength and Protective Coatings of Steel Industrial Chain Link Fence Framework.
8. ASTM F1083 Specification for Pipe, Stee, Hot-Dipped Zinc-Coated (Galvanized Welded, for Fence Structures.
9. ASTM F1184 Specification for Industrial and Commercial Horizontal Slide Gates.
10. ASTM F2200 Specification for Automated Vehicular Gate Construction.

1.3 DEFINITIONS:

A. Corner posts: Posts located at a change in horizontal alignment.
B. End posts: Posts located at the beginning or end of a length of fence.
C. Gateposts: Posts which support the weight of a gate. Gateposts may function also as terminal posts but generally are sized differently.
D. Line posts: Posts between terminal posts.
E. Pull posts: Posts located within a length of fence at certain distances, and at changes in vertical alignment, to facilitate stretching of fabric.
F. Terminal posts: Posts set where fence fabric terminates, and between which the fabric is stretched; a term which includes end, corner, and pull posts.

1.4 SUBMITTALS:

A. Submit in accordance with Submittals section.
B. Shop Drawings:

1. Submit for chain link fences and gates.
2. Required information:

a. Dimensions.
b. Details of fabrication and installation.
c. Fence layout.
d. Location and spacing of posts and accessories.
e. Anchorage details.

C. Manufacturer's literature:

1. Submit for chain link fences and gates.
2. Required information:

a. Manufacturer's technical data.
b. Catalog cuts.
c. Coating data and color choices.

D. Certificates: Submit Manufacturer's certification that materials meet Specification requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Products of the following Manufacturers, provided they comply with requirements of the Contract Documents, will be among those considered acceptable:

1. Framework, posts, rails, fabric and fittings for chain link fence system:

a. Stephens Pipe & Steel, LLC.
b. Merchants Metals
c. Master Halco

2.2 CHAIN LINK FABRIC

A. Steel Chain Link Fabric: Heights indicated on drawings, 2 inch mesh, 9 gauge core (0.148 in), coating weight of 1.2 ounces or greater per square foot.

1. Black Vinyl-Coated Steel Fabric (Aluminized): ASTM A491.
2. Steel chain mesh produced in one piece.
3. Fabric Selvage: Knuckle finish, top and bottom.

2.3 ROUND STEEL PIPE FENCE FRAMEWORK

A. Black Vinyl-Coated Round steel pipe and rail: Schedule 40 standard weight pipe, in accordance with ASTM F1083, 1.8 oz/ ft^2 (550 g/m^2) hot dip galvanized zinc exterior and 1.8 oz/ft^2 (550 g/m^2) hot dip galvanized zinc interior coating.
1. Regular Grade: Minimum steel yield strength 30,000 psi (205 MPa)

2. Line post:
   a. Up to 6 ft: Outside diameter 1.900 inches, F1083 Schedule 40 weight 2.72 lb/ft
   b. Over 6 to 8 ft: Outside diameter 2.375 inches, F1083 Schedule 40 weight 3.65 lb/ft
3. End, Corner, Pull post:
   a. Up to 6 ft: Outside diameter 2.375 inches, F1083 Schedule 40 weight 3.65 lb/ft
   b. Over 6 to 8 ft: Outside diameter 2.875 inches, F1083 Schedule 40 weight 5.79 lb/ft
4. Top, brace, bottom and intermediate rails: Outsdie diameter 1.660 inches, F1083 Schedule 40 weight 2.27 lb/ft.

2.4 TENSION WIRE

A. Black Vinyl-Coated Steel Marcelled Tension Wire: 7 gauge core (0.177 in.) marcelled wire complying with ASTM A824.

   1. Type I Aluminum–Coated (Aluminized) 0.40 oz/ft² (122 g/m²).

2.5 FITTINGS

A. Tension and Brace Bands: Galvanized pressed steel complying with ASTM F626, minimum steel thickness of 12 gauge (0.105 in.), minimum width of 3/4 in. and minimum zinc coating of 1.20 oz/ft². Secure bands with 5/16 in. galvanized steel carriage bolts.

B. Terminal Post Caps, Line Post Loop Tops, Rail and Brace Ends, Boulevard Clamps, Rail Sleeves: In compliance to ASTM F626, pressed steel galvanized after fabrication having a minimum zinc coating of 1.20 oz/ft².

C. Truss Rod Assembly: In compliance with ASTM F626, 3/8 in. or 5/16” diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz/ft², assembly capable of withstanding a tension of 2,000 lbs. (970 kg).

D. Tension Bars: In compliance with ASTM F626. Galvanized steel one-piece length 2 in. less than the fabric height. Minimum zinc coating 1.2 oz. /ft². Bars for 2 in. mesh shall have a minimum cross section of 3/16 in. by 3/4 in.

2.6 TIE WIRE AND HOG RINGS

A. Basic commercial / industrial applications - specify 9 gauge core aluminum alloy ties and hog rings per ASTM F626.

2.7 SWING GATES

A. Black Vinyl-Coated galvanized steel pipe welded fabrication in compliance with ASTM F900. Gate frame members 1.900 in. OD (48.3 mm) ASTM F 1083 schedule 40 galvanized steel pipe. Frame members spaced no greater than 8 ft. (2440 mm) apart vertically and horizontally. Welded joints protected by applying zinc-rich paint in accordance with ASTM Practice A780. Positive locking gate latch, pressed steel galvanized after fabrication. Galvanized malleable iron or heavy gauge pressed steel post and frame hinges. Provide lockable drop bar and gate holdbacks for double gates. Match gate fabric to that of the fence system. Gateposts per ASTM F1083 schedule 40 galvanized steel pipe. See table below for required post out diameter and weight.

B. Gateposts: Regular Grade ASTM F1083 Schedule 40 pipe

Gate fabric height up to and including 6 ft. (1.2m)		
Gate leaf width	**Post Outside Diameter**	**Weight**
up to 4 ft. (1.2 m)	2.375 in. (60.3 mm)	3.65 lb/ft (5.4 kg/m)
over 4 ft. to 10 ft. (1.2 to 3.05 m)	2.875 in. (73.0 mm)	5.79 lb/ft (8.6 kg/m)
over 10 ft. to 18 ft. (3.05 to 5.5 m)	4.000 in. (101.6 mm)	9.11 lb/ft (13.6 kg/m)
Gate fabric height over 6 ft. to 12 ft. (1.2 to 2.4m)		
Gate leaf width		
up to 6 ft. (1.8 m)	2.875 in. (73.0 mm)	5.79 lb/ft (8.6 kg/m)
over 6 ft. to 12 ft. (1.8 to 3.7 m)	4.000 in. (101.6 mm)	9.11 lb/ft (13.6 kg/m)
over 12 ft. to 18 ft. (2.4 to 5.5 m)	6.625 in. (168.3 mm)	18.97 lb/ft (28.2 kg/m)
over 18 ft. to 24 ft. (5.5 to 7.3 m)	8.625 in. (219.1 mm)	28.58 lb/ft (42.5 kg/m)

2.7 CONCRETE

A. Concrete for post footings shall have a 28-day compressive strength of 3,500 psi.

PART 3 EXECUTION

3.1 EXAMINATION:

A. Verify that line of fence has been properly identified.
B. Verify that proper grade has been established.
C. Verify location of underground utilities and structures.
D. Begin fence construction only after adequate clearance on both sides of fence is available.

3.1 FRAMEWORK INSTALLATION

A. Posts: Posts shall be set plumb in concrete footings in accordance with ASTM F567. Minimum footing depth, 36 in. plus an additional 3 in. depth for each 1 ft. increase in the fence height over 4 ft. up to 42 in.. Minimum footing diameter four times the largest cross section of the post up to a 4.00” dimension and three times the largest cross section of post greater than a 4.00”. Top of concrete footing to be 6 inches below grade and sloped to shed water. Line posts installed at intervals not exceeding 10 ft. on center.

B. Top rail: When specified, install 21 ft. lengths of rail continuous thru the line post or barb arm loop top. Splice rail using top rail sleeves minimum 6 in. long. Rail shall be secured to the terminal post by a brace band and rail end. Bottom rail or intermediate rail shall be field cut and secured to the line posts using boulevard clamps or brace band with rail end.

C. Terminal posts: End, corner, pull and gate posts shall be braced and trussed for fence 6 ft. and higher and for fences 5 ft. in height not having a top rail. The horizontal brace rail and diagonal truss rod shall be installed in accordance with ASTM F567.

D. Tension wire: Shall be installed 4 in. up from the bottom of the fabric. Fences without top rail shall have a tension wire installed 4 in. down from the top of the fabric. Tension wire to be stretched taut, independently and prior to the fabric, between the terminal posts and secured to the terminal post using a brace band. Secure the tension wire to each line post with a tie wire.

3.3 CHAIN LINK FABRIC INSTALLATION

A. Chain Link Fabric: Install fabric to inside of the framework maintaining a ground clearance of no less than 3 inches. Attach fabric to the terminal post by threading the tension bar through the fabric; secure the tension bar to the terminal post with tension bands and 5/16 in. carriage bolts spaced no greater than 12 inches on center. Chain link fabric to be stretched taut free of sag. Fabric to be secured to the line post with tie wires spaced no greater than 12 inches on center and to horizontal rail spaced no greater than 18 inches on center. Aluminum alloy tie wire shall be installed following ASTM F567: Wrap the tie around the post or rail and attached to a fabric wire picket on each side of the post or rail by twisting the tie wire around the fabric wire picket two full turns, cut off excess wire and bend over to prevent injury. Or preformed 9 gauge power-fastened wire ties shall be installed following ASTM F626: Wrap the tie a full 360° around the post or rail and fabric wire picket, using a variable speed drill, twist the two ends together three full turns, cut off any excess wire and bend over to prevent injury. Secure the fabric to the tension wire by crimping hogs rings around a fabric wire picket and tension wire.

3.4 GATE INSTALLATION

A. Swing Gates: Installation of swing gates and gateposts in compliance with ASTM F 567. Direction of swing shall be inward. Gates shall be plumb in the closed position having a bottom clearance of 3 in., grade permitting. Hinge and latch offset opening space shall be no greater than 3 in. in the closed position. Double gate drop bar receivers shall be set in a concrete footing minimum 6 in. diameter 24 in. deep. Gate leaf holdbacks shall be installed for all double gates.

3.6 NUTS AND BOLTS

A. Bolts: Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.

3.7 ELECTRICAL GROUNDING

Grounding: Grounding of the fence and gates is not the responsibility of the fence contractor and not included in the fencing scope of work for this contract. Grounding, when required, shall be specified and included in Contract Section 33 79 00 Site Grounding. A licensed electrical contractor shall install grounding when required.

3.8 CLEAN UP

Clean Up: The area of the fence line shall be left neat and free of any debris caused by the installation of the fence.

3.9 ADJUSTING:

A. General:

1. Adjust brace rails and tension rods for rigid installation.
2. Tighten hardware, fasteners, and accessories.

END OF SECTION

BASEBALL AND SOFTBALL EQUIPMENT
SECTION 323310

PART 1 GENERAL

1.1 SUMMARY:

A. Section includes:

1. This section includes, but necessarily limited to, the furnishing and installation of Baseball and/or Softball equipment as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the work

2. Equipment:

1. Bases
2. Home Plate
3. Pitching Rubber
4. Fence Cap
5. Backstop, Baseball & Softball
6. Foul Poles

B. Related sections:

1. Review Contract Documents for requirements that affect work of this section. Specification sections that directly relate to work of this section include, but are not limited to:

a. Section 312000 Earth Moving
b. Section 323113 Chain Link Fences & Gates

1.2 REFERENCES:

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:

1. ASTM A491 Specification for Aluminum-Coated Steel Chain Link Fabric.
2. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
3. ASTM F552 Standard Terminology Relating of Chain Link Fence.
4. ASTM F567 Standard Practice for Installation of Chain Link Fencing.
5. ASTM F626 Specification for Fence Fittings.
6. ASTM F900 - Standard Specification for Industrial and Commercial Swing Gates.
7. ASTM F1043 Specification for Strength and Protective Coatings of Steel Industrial Chain Link Fence Framework.
8. National Federation of State High School Associations (NFHS) ‘Court and Field Diagram Guide” Current addition.

1.3 SUBMITTALS:

A. Product Data:

1. Submit manufacturer’s product literature, technical specifications, standard color lists and other data required to demonstrate compliance with specified requirements for all athletic equipment.

1.4 QUALITY ASSURANCE

A. All materials, hardware, and furnishings shall be new, first quality, manufactured for specific use on Baseball and/or Softball fields by a reputable manufacturer.

B. Field Measurements & product installation:

1. Contractor shall verify position and layout of all athletic field equipment:

a. Verify all dimensions by field measurements.
b. Verify conformance with NFHA 'Court and Field Diagram Guild', current additions.

PART 2 PRODUCTS

2.0 PRODUCTS & MANUFACTURERS:

A. Product selections named are provided to establish the minimum standard:

B. Equipment:

1. BASES:

a. Break Away Base System including: (3)HB-2 Base Plates, (3)HB-2A Stanchions, (6)HB-X-12 Anchor Handles, (3)HB-3 Plastic Anchor Housings, (3)HB-X-13 Steel Anchor Sleeves, (1)HB-X-10 "Rogers Digout Tool". 1 set per field.
b. Manufacturer by:
Rogers USA, Inc. P.O. Box 346 Elizabethtown, PA 17022
Phone: 800-829-7311 Fax: 717-361-8925
Website:www.rogersbreakawaybase.com

Approved Equal.

2. HOMEPLATE:

a. Model SEHP Home Plate with ground anchor. Hard white rubber plate with black beveled edges. 1 per field.
b. Manufactured by:
i. SportsEdge® P.O. Box 837 / 259 Murdock Rd. Troutman, NC 28166 PH: 800-334-6057 F: 704-528-0179 Email: info@sportsedge.com;
ii. Approved Equal.

3. PITCHER'S RUBBER:

a. Model SEPR Four Way Pitchers Rubber, official 6" x 24", made of solid white rubber with PVC inner core. 1 per field, (2 required at pitching warm-up area – see plans).
b. Manufactured by:
i. SportsEdge® P.O. Box 837 / 259 Murdock Rd. Troutman, NC 28166 PH: 800-334-6057 F: 704-528-0179 Email: info@sportsedge.com
ii. Approved equal.

4. FENCE CAP:

a. 4” diameter slit polyethylene.
b. Color: Orange
c. Weather-treated and UV protected.
d. Ties: wire ties to be installed every 3 feet, color orange.
e. Manufactured by:
i. SportsEdge® P.O. Box 837 / 259 Murdock Rd. Troutman, NC 28166 PH: 800-334-6057 F: 704-528-0179 Email: info@sportsedge.com; Model SEFC250
ii. Approved equal.

5. BACKSTOP (Each Field):

a. 20 ft high black vinyl clad chain link fence design.
b. Coverage shall be from dugout to dugout.

6. FOUL POLE:

a. Shall be set in concrete and grounded.
b. Shall be set in line with the fence.
c. Height varies by field. See detail sheet.
d. Shall be a minimum of 4 inch diameter and be SS-40 Steel.
e. Shall not be tapered.
f. Shall have wing panels with 2 inch mesh, 11 gauge.
g. Foul poles with cap, wing panels and mesh shall be power coated ‘Orange”.
h. Foul poles and wings may be manufactured locally by a certified welder.

PART 3 EXECUTION

3.1 EXAMINATION

A. Visually inspect for any damage from shipping or manufacturing.

B. Field verify layout(s).

C. Field verify location of underground utilities and structures.

3.2 INSTALLATION

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

END OF SECTION

SECTION 329200
TURF RESTORATION

PART 1 - GENERAL

1.1 SUMMARY:

A. This Section includes the work required for restoration of areas disturbed by construction and maintaining lawns until final acceptance.

1.2 REFERENCES:

A. MDOT - Michigan Department of Transportation, *"2012 Standard Specifications for Construction".*

1.3 SUBMITTALS:

A. Topsoil:

1. Analysis: Certification of suitability by local agricultural agent.

B. Seed:

1. Analysis: Certification of purity and germination by manufacturer. From MDOT Qualified Products List.
2. Submit all seed tags after completion of seeding.

C. Mulch:

1. Source and Content: Certification by supplier.

D. Chemical Nutrient Fertilizer

1. Analysis: From MDOT Qualified Products List.

1.4 JOB REQUIREMENTS:

A. Areas Disturbed by Construction:

1. Restoration of lawn areas: Fine grade to 4 inches below finish elevations. Remove all stones and debris greater than 1 inch diameter. Place topsoil (includes topsoil salvaged from this site) at the depth stated in the plans, seed, fertilizer, mulch and mulch anchoring.

B. Scheduling:

1. Restoration of lawns and other surface features: Promptly following curb and gutter, site improvements and paving.
2. Clean up: Promptly following restoration.

C. Seasonal Limitations: MDOT 816.03.C.4.

1.5 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.

1.6 MAINTEANCE SERVICE:

A. Maintain seeded area, including watering, immediately after placement until grass is well established and accepted by the owner's representative.

PART 2 PRODUCTS

2.1 MATERIALS:

A. Topsoil: MDOT 815.03.A and 816.03.
B. Chemical Fertilizer: Furnish and apply fertilizer(s) as needed. It is the Contractor's responsibility to preform soil tests to select the fertilizer type(s) and the rate at which it is applied for all listed applications. Phosphorus is allowed for use only at the time of planting and when required by soil conditions.
C. Grass Seed: MDOT 816.03.C:

1. High Traffic Lawns: Twenty Five percent (25%) Perennial Ryegrass, Fifteen percent (15%) Kentucky Bluegrass, Forty percent (40%) Creeping Red Fescue, (20%) Tall Fescue.
2. Other areas: Ten percent (10%) Perennial Ryegrass, Thirty Five percent (35%) Atlantis Kentucky Bluegrass, Twenty Five percent (25%) Park Kentucky Bluegrass, Fifteen percent (15%) Creeping Red Fescue, Ten percent (10%) Annual Ryegrass, Five percent (5%) Chewings Fescue.
3. Athletic Fields: Seed blend shall consist of a minimum of 3 bluegrass varieties and one of the ryegrass varieties. Blend shall be 80% Kentucky Bluegrass and 20% Perennial Ryegrass by weight. Only Elite bluegrasses (according to NTEP characteristics ratings) will be allowed on Athletic surfaces. No "named common" types will be accepted. Enhanced Elite varieties will be allowed at same seeding rates.

C. Sod: MDOT 816.03.D
D. Mulch Blanket: Excelsior or straw mulch blanket listed on the current Qualified Products List, MDOT Materials Sampling Guide. Straw mulch if specified in plans.
E. Mulch Anchoring: Qualified Products List, MDOT Materials Sampling Guide.

PART 3 - EXECUTION

3.1 PREPARATION:

A. Inspection: Approval required.
B. Verify trench backfilling have been inspected.
C. Verify Engineer has approved topsoil material prior to starting work.
D. Fine grade soil surface to eliminate uneven areas, ruts and low spots. Remove weeds, debris, roots, branches, stones in excess of ½" in size.
E. Loosen soil to a depth of four inches (4") in lawn areas by approved method of scarification and grade to remove ridges and depressions. Remove all stones or foreign matter from top two inches (2") of soil

3.2 TOPSOIL:

A. Place topsoil in preparation of seeding or sodding at the specified thickness.

B. Place topsoil in dry weather.
C. Construction methods: MDOT 816.03.

3.3 SEEDING:

A. Do not sow immediately following rain, when the ground is too dry, or during windy periods. No seeding shall occur on frozen ground or at temperatures are lower than 32° F (0° C).
B. All seeding is to be done in dry or moderately dry soil and at times when the wind does not exceed a velocity of five (5) miles per hour.
C. Immediately before sowing the seed, the earth surface shall be re-worked until it is a fine, pulverized, smooth seedbed, showing not more than 1/4" variance from grade.
D. Apply seed mixture, as specified at a rate of 2.5-4 lbs/100 sq. ft. Apply seed in two directions where possible at a rate of 1.25-2 lbs. /1000 sq. ft. in each direction. Seed shall be uniformly spread over the previously fine graded and fertilized topsoil. Hand sew seed around each irrigation system head.

3.4 MULCHING:

A. Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150mm) long.
B. Contractor shall return to site six (6) weeks after installation to remove mesh.

3.5 FERTILIZER:

A. Construction methods: MDOT 816.03B. Application rate: 150 lbs/acre.

3.6 ACCEPTANCE

A. If an area washes out after this work has been properly completed and approved by the owners representative, make the required corrections to prevent future washouts and replace the topsoil, fertilizer, seed and mulch. This replacement will be paid for as additional work using the applicable contract items. If an area washes out for reasons attributable to the Contractor's activity or failure to take proper precautions, replacement will be at the Contractor's expense.
B. Maintenance

1. Maintenance of all lawns consists of mowing, watering, fertilizing and repairing erosion. Maintenance of lawns shall commence when any portion of the seeding has been completed. Seeded lawns shall never reach a height of three (3) inches prior to a cutting and shall be cut to a height of two (2) inches. The contractor is responsible for setting up a watering schedule and adjusting accordingly as environment conditions change throughout the growing season.

    a. If, for reasons beyond the Sub-contractor's control, the height of the grass has exceeded three (3) inches, the mower blades shall be raised so that at no time will more than 1/3 of the grass leaf surface be removed.

2. Contractor shall provide additional fertilizer applications as necessary, to stimulate rapid turfgrass growth.

3. Contractor shall notify the Owner through the Engineering in writing one (1) week in advance of the final lawn cutting to allow the Owner and the Engineer to inspect the lawns and schedule the contractors maintenance work. The Owner will accept the

lawns after a minimum of three (3) cuttings if a uniform cover of grass is established and is acceptable to Owner and Engineer.

4. If an infestation of weeds or crab grass develops prior to acceptance of the lawn, the Contractor shall immediately treat the infestation by hand weeding or chemical control. The chemical control shall be furnished and installed by the contractor as recommended by the manufacturer and approved by the Engineer. At least two weeks shall elapse after chemical control is applied before a request or inspection for acceptance is made to the Engineer.

3.7 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by the Engineer:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over a 10 square foot and bare spots not exceeding 5 by 5 inches.
2. Use specified materials to reestablish turf that does not comply with the requirements and continue watering and maintenance until turf is satisfactory.

3.8 CLEAN UP AND DISPOSAL

A. Remove from the site all equipment, materials, and debris resulting from construction including this section. Leave work area neat and clean and in a condition acceptable by the Engineer and School District. All work shall be complete, ready for use, at the time of final acceptance.

END OF SECTION

SECTION 329210
BALL FIELD SURFACE RESTORATION

PART 1 - GENERAL

1.1 SUMMARY:

A. This Section includes the work required for restoration of areas disturbed by construction.

1.2 REFERENCES:

A. MDOT - Michigan Department of Transportation, *"2012 Standard Specifications for Construction".*

B. MHSAA Regulations.

1.3 SUBMITTALS:

A. Infield Material. Source and quantity.
B. Fertilizer: From MDOT Qualified Products List.
C. Sod approved for sports field.

1.4 JOB REQUIREMENTS:

A. Construction:
   1. Lawn areas: Remove and stockpile existing topsoil for re-use. Fine grade to 4 inches below finish elevations. Remove all stones greater than 1 inch diameter, sticks, roots and debris. Place 4 inches of topsoil, seed, fertilizer, fungicide, mulch and mulch anchoring. Infield area of baseball field shall be sod (see plans).
   2. Infield areas: Fine grade to 4 inches below finished grade.

B. Scheduling:
   1. Restoration of lawns and other surface features: Promptly following final grading.
   2. Clean up: Promptly following restoration.

C. Seasonal Limitations: MDOT 816.03.C.4.

D. Watering: Once seed mixture, fertilizer, mulch and mulch anchoring are completed, the contractor shall be responsible for watering all lawn areas a minimum of three days a week (unless weather permits less) for a period of 8 weeks. Coordinate watering of ball fields with owner's representative.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Topsoil: Existing topsoil from site shall be utilized. All topsoil shall be stripped and stockpiled prior to placement on all areas specified to be lawn areas.

B. Chemical Fertilizer: Grade 12:12:12.

C. Grass: MDOT 816.03.D and approved for sports field application

D. Mulch: Mulch for this project shall be straw mulch, not hay. Mulch Anchoring shall be from the MDOT Qualified Product List.

E. Infield Material:

1. Shall be clean, dry clay mixed with washed mason-type sand resulting in a weed-free mixture having a yield of 1.35 tons per cubic yard when placed loose or 1.5 tons per cubic yard when compacted 85%-90% on a Standard Proctor Test (ASTM D 689-07). The material possesses the following particle size analysis:
   a. Total sand content shall be 70-75 percent.
   b. The combined amount of sand retained on the medium coarse and very coarse sieve shall be greater than 50 percent.
   c. The combined amount of silt and clay shall be 25-50 percent.
   d. The ratio of silt divided by clay, otherwise know as the SCR, shall be 0.5-1.0.
   e. No particles greater than 3 millimeters.
   f. Equal to or less than 5 percent of particles shall be retained on the 2 millimeter sieve.
2. Manufacturer:
   a. Stone Dust
   b. Natural Sand Company (Dura Edge Classic Infield Mix).
      Toledo, Ohio
      Contact: Jim Bruning
      Phone: (419)973-3695
   c. Approved equal
   d. Certified to meet above requirements.

F. Infield Top Dressing:
   a. Washington Ball Mix by Mar-Co-Clay
      Email, sales@marcoclay.com
      Phone, 1-800-950-2555
   b. Magic Mix by HK Sports Flields.
      Contact: Mike Parent
      Email, mike@hksportsfield.com
      Sister Bay, MI
      Phone, 1-866-407-7687
   c. Diamond Pro Red Infield Conditioner
      Turfgrass Inc.
      Contact: John Thomas
      South Lyon, Mich.
      Phone: (517)403-3778
   c. Or approved equal.

G. Mound and Box Packing Clays:
   a. MoundMaster Bocks & Turface Professional Mound Clay by Turface Athletics
      Supplied by: Profile Products LLC
      Buffalo Grove, IL
      Phone, 1-800-207-6457
   b. Or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION:

A. Inspection: Approval required.

3.2 TOPSOIL:

A. Place topsoil on prepared graded base.

B. Construction methods: MDOT 816.03.

3.3 WATERING:

A. Watering may be done by use of the existing hydrants on site. The contractor shall contact the city of Burton and secure as required, permission and obtain a water meter as required. Fees for water usage shall be paid for by the contractor. The owner shall be notified each time watering will be done.

3.4 INFIELD SURFACE PREPARATION:

A. Sub-grade Preparation

1. Excavate skinned infield area to a depth of 4 inches.
2. Sub-grade should be measured to insure uniformity of depth and then rolled with 1 ton roller to create a compacted surface.
3. Sub-surface drainage is not required within the skinned area.

B. Installation of Infield Mix

1. The installation of the infield mix should be applied in 1” to 2” lifts to ensure proper grade and compaction.
2. Each lift should be graded with a box blade and compacted with a one ton roller.
3. Moisture should be added as needed to ensure proper compaction.
4. Scarity the surface between lifts to facilitate bonding of the next lift and repeat until finsh grade elevation is achieved.
5. Achive 85% to 90% compaction based on Standard Proctor Test (ASTM D 689-07).
6. Finish grade should be completed using equipment outfitted with laser leveling technology (½ to 1% slope on final grade).

C. Infield Top Dressing and Warning Track Mix: Per manufacture’s recommendation.

D. Mound and Box Packing Clays: Per manufacture’s recommendation.

END OF SECTION