SECTION 01 1300
SUBMITTALS

1.0 CONTRACTOR'S CONSTRUCTION SCHEDULES

1.1 Immediately after notification of Contract Award, the Contractor shall prepare and deliver to the Owner's Representative for approval, a Construction Schedule. This Schedule shall include a breakdown of the various divisions of the Work and shall show the date of commencement and the date of completion of each division of the Work. This Schedule shall be prepared on the basis of the Contractor's stated Final Completion Date and in consultation with Contractors for any other work involved in the completion of the Project, and with the Owner's Representative's consent or direction, shall be revised from time to time as required. This Schedule shall include the Owner's equipment installation timetable (if any) as furnished by him/her.

2.0 CONTRACTOR PAYOUTS AND LIEN WAIVERS

2.1 Contractor shall submit payment requests in **triplicate** using standard AIA Document G702 "Application and Certificate for Payment.

2.2 Waivers of lien shall be submitted in **triplicate** from all major Subcontractors or suppliers as directed by the Owner.

3.0 SURVEY DATA

3.1 Contractor shall be responsible for properly laying out the Work, and for lines and measurements for the Work executed under Contract Documents. Verify figures shown on the drawings before laying out the Work, and report errors or inaccuracies in writing to the Owner's Representative before commencing work. The Owner's Representative will in no case assume responsibility for laying out the Work.

3.2 Establish necessary reference lines and permanent benchmarks from which built object lines and elevations shall be established. Contractor shall establish two such benchmarks in widely separated locations and be responsible for proper location and level of the work and for maintenance of reference lines and benchmarks. Establish benchmarks and axis lines showing exact floor elevations and other lines and dimensional reference points as required for information and guidance of all trades.

3.3 Each Subcontractor, as it applies to his/her work, shall verify grades, lines, levels, locations, and dimensions as shown on drawings and report any errors or inconsistencies to the Owner's Representative before commencing work. Starting of work by Subcontractor shall constitute acceptance.

4.0 SHOP DRAWINGS, PRODUCT DATA, SAMPLES (SUBMITTALS)

4.1 The contractual requirements for shop drawings, product data, and samples are specified in the General and Supplemental Conditions. The Contractor shall submit shop drawings, product data, and samples.

4.2 Within thirty (30) days after award of Contract, Contractor shall prepare a schedule of specific target dates for submission and return of Owner's Representative reviewed submittals required by Contract Documents.

4.3 No Portion of work requiring such submittal will be permitted to start until submission has been reviewed by the Owner's Representative. Changes or modification to Contract Documents shall not be initiated by corrections to submittals.

4.4 Submittals which reflect major design changes to the Contract Drawings or Specifications must be accompanied by a separate letter justifying change, and will require that a change order be executed prior to acceptance.

5.0 SUBMITTAL PROCEDURES BY CONTRACTOR

5.1 Shop Drawings

A. Submit to the Owner's Representative four (4) copies of Shop Drawings for review. The Owner's Representative's check of any Contractor's Shop Drawings will cover approval of material and design only, and while figures or dimension will be checked in a general way, the responsibility for correctness of all drawings will rest with the Contractor submitting the Shop Drawings. After review, three (3) copies of the Shop Drawings with corrections or accompanying comments will be returned to the Contractor for resubmission, if required, after corrections have been made. For final resubmission, after corrections have been made, the Contractor shall send prints to the Owner's Representative for distribution. The Owner's Representative review of the Shop Drawings does not relieve the Contractor from furnishing materials and performing work as required by the Contract Documents. No extension of time will be granted for review and approval.

5.2 Product Data

A. Submit to the Owner's Representative three (3) copies of the manufacturer's specification, installation instructions and general recommendations for applicable products. Include manufacturer's certification or other data substantiating that the materials comply with the requirements and are recommended by manufacturer for the application shown and specified. Indicate by copy of transmittal form that Installer has received copy of the instructions and recommendations. Hardware schedules and collection of catalog cuts such as light fixtures, site furniture, etc., shall be presented in bound brochures, three (3) copies each.

5.3 Samples

A. Submit to the Owner's Representative two (2) samples and color data information for all finishes and finish materials.

6.0 DISTRIBUTION

6.1 Contractor is responsible for obtaining and distributing required submittal items to his/her Subcontractors and material suppliers after, as well as before, items are stamped "Approved."

7.0 SHOP DRAWINGS FILE TO OWNER

7.1 At completion of construction, Contractor shall furnish for Owner's use one (1) unused copy of all Shop Drawings, manufacturer's diagrams, literature, etc., that were used in execution of the Work.

END OF SECTION

SECTION 01 1500
TEMPORARY FACILITIES

1.0 GENERAL

1.1 Contractor shall provide temporary facilities and controls as specified or as required for protection of the Work in accordance with applicable codes.

1.2 All temporary connections to utilities and services shall be acceptable to Owner and local authorities having jurisdiction thereof. OSHA Standards and Regulations shall apply if more restrictive.

1.3 Contractor shall note that if any part of the permanent building equipment (plumbing, heating, electrical) is used to provide temporary utilities, this shall not void or shorten the equipment guarantee provided by the Contractor and material and equipment supplier and as described in Contract Documents.

2.0 TEMPORARY WATER

2.1 The Contractor shall provide temporary water service for construction operations.

3.0 TEMPORARY SANITARY FACILITIES

3.1 Provide and maintain required sanitary facilities for work force.

4.0 CONSTRUCTION AIDS

4.1 Contractor shall furnish, maintain, and remove at completion, all temporary ladders, ramps, barricades, enclosures, fences, walks and like facilities, as required for proper execution of Work for all trades, except as otherwise specifically required under individual section.

4.2 All such apparatus, equipment, and construction shall meet all requirements of OSHA and other applicable state or local laws.

4.3 Contractor and each of their Subcontractors, for their own use, shall provide all scaffolding required for execution of their own work. Scaffolding shall not be built into walls of buildings.

5.0 WATER AND SNOW CONTROL

5.1 From commencement to final payment Contractor shall keep all parts of the Work free from accumulation of water, snow and ice for the protection of their Work. Protect the Work against weather damage.

6.0 TEMPORARY FIELD OFFICES

6.1 Contractor, at his/her option, shall provide and maintain a field office. Construction sheds, trailers and temporary offices provided by Contractor shall be maintained in good condition. Field office is not a pay item and if included at Contractor's option will be considered incidental to the project cost.

7.0 TEMPORARY LIGHT AND POWER

7.1 The Contractor shall provide electrical power during construction operations.

7.2 Contractor shall provide his own extension cords and lamps, if required, and shall also be responsible to see that these are furnished by or for each of his/her Subcontractors as they may be required.

7.3 Where service of characteristics, quality or locations other than described above may be required, each Contractor requiring same shall provide such additional service and necessary equipment at his/her own expense.

8.0 SHORING AND BRACING

8.1 The Contractor shall provide, install and maintain all shoring and bracing or other devices necessary to maintain all aprons, curbs, pavements, and existing structure, etc., at their present levels and in their present location and condition during construction. Demolish all such work after it is not needed and required and remove it from the premises.

END OF SECTION

SECTION 01 2100
SITE PREPARATION AND PROTECTION OF EXISTING FACILITIES

1.0 GENERAL

1.1 Description

A. This work shall consist of the complete removal of all items called for in the plans and specifications or as otherwise implied in a safe and orderly manner creating as little disturbance as possible.

B. All areas indicated for construction of any kind shall be cleared of any debris, undergrowth, weeds, stumps, roots, and marked trees which might interfere with the progress of that work. Unmarked trees or any plant material indicated to be saved by the Owner or Owner's Representative shall be given special protection as specified.

2.0 PRODUCTS (not applicable)

3.0 EXECUTION

3.1 Safety of Operations

A. Work site safety is the Contractor's responsibility. During removal operations, proper signs and security fence shall be installed by the Contractor prior to commencing work. Barricades shall be used to warn and protect the public against hazards. If a street must be temporarily closed to traffic, it shall be the Contractor's obligation to make arrangements for permission from the governing agency prior to closing. After such approval is obtained, the Contractor shall notify the Owner, local law enforcement, and Fire Department of actual times and dates of closure.

3.2 Protection and restoration of Items to Remain.

A. Locations and dimensions shown in the Drawings for existing facilities are in accordance with available information obtained without uncovering, measuring or other verification and are not guaranteed. The Contractor shall protect from damage private and public utilities encountered during the Work. The Contractor shall, before an excavation begins, call J.U.L.I.E. or Digger (depending on service location).

B. Extreme care shall be utilized when removing any item adjacent to structures, utilities, paving, vegetation or any item not indicated for removal or relocation whether shown on the Drawings or not. These items shall be properly protected as required to keep them from damage or other disturbance of any kind during the course of work. Existing utilities shall be protected and maintained to prevent leakage, settlement or other damage. Damage to any of the above shall be repaired or replaced to former condition as required by the utility company or Owner at the Contractor's expense. Repair of damaged utility shall be completed within 24 hours of damage occurring.

C. The Contractor shall, at no additional cost to the Owner, provide and install safeguards acceptable to the Owner to protect public and private property. During removal operations, proper signs and security fence shall be installed by the Contractor prior to commencing work. Barricades shall be used to warn and protect the public against hazards.

1. If a street must be temporarily closed to traffic, it shall be the Contractor's obligation to obtain permission from the governing agency prior to closing. After such approval is obtained, the

Contractor shall notify the Owner, local law enforcement, and Fire Department of actual times and dates of closure.

2. If public or private property is damaged or destroyed or its use interfered with by the Contractor, the Contractor's agents or the Contractor's employees, such interference shall be terminated and damaged or destroyed property repaired and restored immediately to its former condition by the Contractor at the Contractor's expense.
3. Should the Contractor refuse or not respond promptly to a written request to restore damaged or destroyed property to its original condition, the Owner may have such property restored by other means at the Contractor's expense.

3.3 Protection and Restoration of trees, shrubs, and plant material

A. Trees, shrubs, plants, and other landscaping not designated for removal shall be left in place and protected from damage or injury during construction. The Contractor shall provide full and adequate protection against construction damage to all landscaping that is to remain.
B. No traffic, storage of Equipment, vehicles or materials shall be allowed within the drip line of trees not designated for removal unless plans permit such activity. In addition, plans may indicate no-construction activity areas that are larger than the dripline (see plan notes).
C. Root pruning shall occur on all tree roots larger than one inch, but less than two inches in diameter. Such roots shall be cleanly cut in place. Root pruning shall be done so as not to disturb remaining fibrous roots.
D. Where excavation operations occur and where tree roots 2 inch or greater in diameter are discovered, the Contractor shall promptly notify the Owner's Representative, who will determine how these tree roots are to be handled.
E. Promptly cover exposed roots and maintain moisture on them to keep them alive.
F. Failure to promptly preserve the viability of roots on trees to be saved may result in the Owner making corrective action. Given the urgency needed in keeping desirable tree roots alive, the Owner may take such action following as little as twenty-four-hour notice to the Contractor. Reasonable costs for any and all such action by Owner may be charged to the Contractor and/or deducted from project monies due to the Contractor.

3.4 Plant Damage Compensation

A. The Owner shall be reimbursed for trees or other plant material not ordered or designated to be removed but that are destroyed or irreparably damaged by Contractor operations as determined by the Owner's Representative. At a minimum, the Contractor shall reimburse Upland Design and/or other Owner consultant for time and materials expended related to tree damage (such as meetings, measuring, preparing reports and preparing change orders)
B. Damage to tree trunks, branches and roots shall be reported to the owner's representatives immediately.
C. The penalty for each incidence of trunk damage to trees shall be $450.00. Use current value at time of bidding.
D. The penalty for each incidence of branch or root damage shall be $100.00 Use current value at time of bidding. per caliper inch.

E. The penalty for compaction of soil by unauthorized vehicle travel on the grounds shall be $.45 per square foot (Use current value at the time of bidding) of traveled area.
F. Where the damaged tree is a heritage tree or landscape specimen, the reimbursement amount will be based on a benefit-based-valuation. This service is to be conducted by a certified arborist trained in tree appraisals that is approved by the Owner and the cost of the service will be borne solely by the contractor.
G. The penalty for damage to a shrub shall be the removal and replacement cost as determined by at least two written quotes obtained by the Owner.

3.5 Removal Responsibility

A. All debris, paving, equipment, fencing, trees, stumps, sod or soil to be cleared and removed from the project area shall be legally disposed of off site at the arrangement and expense of the Contractor. No materials will be stockpiled on site for future disposal; materials used for fill or topsoil may be stored on site. No excavation areas will be left in unsafe or unsightly conditions at day's end. The Contractor will be responsible for all transportation and disposal fees associated with this work. Burning of any materials on site is prohibited unless indicated otherwise on plans.

END OF SECTION

SECTION 01 2140
SOIL, CONSTRUCTION & DEMOLITION DEBRIS REMOVAL

1.0 GENERAL

1.1 Introduction

A. Related Documents: All terms and conditions of the Contract apply to this Section.

B. Work included: This specification is for the excavation, stockpiling, loading, hauling, removal, and disposal of any soils (including non-special waste soils and non-hazardous special waste soils), fill, backfill, topsoil, CU structural soil/stone, and/or construction and demolition debris. The contractor shall perform the work under this Section in accordance with all applicable local, county, state, and federal regulations. The work shall include the following:

1.2 Removal and disposal

A. Excavation of soils (including non-special waste soils and non-hazardous special waste soils), fill, backfill, topsoil, CU structural soil/stone, and/or construction and demolition debris materials to the depth required to complete the proposed site preparation/construction work activities as specified in the Architect/Engineer drawings and specifications.

B. Perform analytical testing by an IEPA-accredited laboratory for waste stream authorizations as necessary to secure authorization to dispose of the material at an appropriately permitted disposal facility.

C. Collect samples only from the excess materials that require offsite disposal. Under no circumstances shall the contractor sample any material that is to remain onsite without authorization directly from the Owner.

D. Obtain authorization from a permitted disposal facility – either a Clean Construction & Demolition Debris facility or a Subtitle D landfill.

E. Load and transport all materials to the approved permitted disposal facility.

F. Prepare daily reports, transport manifests, weight tickets and receipts (as applicable) prior to starting any soil removal activities.

G. Provide copies of all daily reports, transport/waste manifests, weight tickets, and disposal receipts (as applicable) to the Owner's Representative on a daily basis documenting proper disposal of soils (including non-special waste soils and non-hazardous special waste soils), fill, backfill, topsoil, CU structural soil/stone, and general construction and demolition debris materials.

1.3 Definitions

A. Agency means Illinois Environmental Protection Agency (IEPA).

B. Board Authorized Representative means the person or entity designated as the official representative of the owner in connection with a project.

C. Clean Construction & Demolition Debris means uncontaminated broken concrete without protruding metal bars, bricks, rock, stone, reclaimed or other asphalt pavement, or soil generated from construction or demolition activities. CCDD may include uncontaminated broken concrete without protruding metal bars, bricks, rock, stone, or reclaimed or other asphalt pavement that has been painted ("painted CCDD") if the painted CCDD is used as fill material at

a CCDD fill operation in accordance with Section 1100. 212 of the Illinois Environmental Protection Act. Clean construction or demolition debris does not include uncontaminated soil generated during construction, remodeling, repair, and demolition of utilities, structures, and roads provided the uncontaminated soil is not commingled with any clean construction or demolition debris or other waste. Uncontaminated soil may include incidental amounts of stone, clay, rock, sand, gravel, roots, and other vegetation.

D. CU structural soil/stone means a uniformly blended mixture of crushed stone, clay, loam and/or hydrogel.

E. Fill means any earthen or non-earthen materials including but not limited to any sediment, granular or cohesive non-native earthen materials, cinders, ash, wood, and brick, concrete, and asphalt fragments, glass, and building debris encountered above naturally occurring undisturbed soils or bedrock in built-up areas.

F. General construction and demolition (C&D) debris means non-hazardous, uncontaminated materials resulting from construction, remodeling, repair, and demolition of utilities, structures, and roads as defined in Public Act 92-0574, The Environmental Protection Act, 415 ILCS 5 Section 3.160 and regulated under Title 35: Environmental Protection; Subtitle G: Waste Disposal; Chapter I: Pollution Control Board; Subchapter i: Solid Waste and Special Waste Hauling. C&D debris may include soil, wall coverings, reclaimed asphalt pavement, rock, plaster, glass, non-hazardous painted wood, drywall, plastics, non-hazardous coated wood, non-asbestos insulation, bricks, wood products, roofing shingles, concrete, and general roof coverings.

G. Permitted Subtitle D landfill means any solid waste landfill facility in any state licensed and/or permitted to accept non-hazardous waste.

H. IEPA means Illinois Environmental Protection Agency.

I. IDOT means Illinois Department of Transportation.

J. Manifest means the form provided or prescribed by IEPA and used for identifying name, quality, routing, and destination of special waste during its transportation from point of generation to the point of disposal, treatment, or storage.

K. Hazardous waste means a waste, or combination of wastes, which has been identified by characteristics or listing as hazardous pursuant to Section 3001 of the Resource Conservation and Recovery Act of 1976, P.L. 94-580, 40 CFR part 261, Illinois Environmental protection Act 415 ILCS 5/3.220, and Section 809.103 of Title 35: Environmental Protection; Subtitle G: Waste Disposal; Chapter I: Pollution Control Board. A waste is classified as hazardous if it exhibits any of the following characteristics: 1) ignitability, 2) corrosivity, 3) reactivity, or 4) toxicity, and as defined in Illinois Administrative Code Title 35, Section 721.103 (35 IAC 721.103).

L. MSDS means Material Safety Data Sheet, required by OSHA for any substances that are toxic, caustic, or otherwise potentially hazardous to workers.

M. Non-Special Waste mean a non-hazardous industrial-process or pollution-control waste that is not a liquid (as determined by paint-filter test SW-846 Method 9095); not regulated asbestos-containing material as defined in 40 Code of Federal Regulations, Section 61.141; does not contain polychlorinated biphenyls (PCBs) regulated in accordance with 40 Code of Federal Regulations, Part 761; is not formerly hazardous waste rendered non-

hazardous; and does not result from shredding recyclable metals (e.g. auto fluff).

N. OSHA means Occupational Safety and Health Administration.

O. Soil means any granular or cohesive materials designated for removal as specified in the Architect/Engineer drawings and specifications and includes soils that are determined to be non-special and special waste.

P. Special waste means any wastes as defined in Title 35: Environmental Protection; Subtitle G: Waste Disposal; Chapter I: Pollution Control Board; Subchapter i: Solid Waste and Special Waste Hauling; Part 808: Special Waste Classifications; Subpart A: General Provisions; Section 808.110,

AND

Any wastes as defined in Title 35: Environmental Protection; Subtitle G: Waste Disposal; Chapter I: Pollution Control Board; Subchapter i: Solid Waste and Special Waste Hauling; Part 809: Non Hazardous Special Waste Classifications; Subpart A: General Provisions; Section 809.103.

Q. SROs mean soil remediation objectives for various exposure routes identified in 35 Illinois Administrative Code 742: Tiered Approach to Corrective Action Objectives (TACO).

R. Storm water means water deposited at the site in the form of rain, snow or other natural weather event.

S. TACO means TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES per 35 Illinois Administrative Code 742.

T. Topsoil means soils or black dirt used to promote vegetative growth.

U. USEPA means United States Environmental Protection Agency.

1.4 Submittals

A. Copies of the following submittals shall be prepared and submitted to the Owner and Owner's Authorized Representative at contractor's own cost:

1. Soil, fill, backfill, CU structural soil/stone, construction and demolition debris removal

a. Letter of authorization from the facility where soils (including non-special waste soils and non-hazardous special waste soils), fill, general or clean construction and demolition debris are to be deposited prior to removal from the site.

1.5 Notifications

A. The contractor shall notify the Owner or Owner's Authorized Representative no less than forty-eight (48) business hours prior to loading and transporting any materials from the site.

1.6 Recordkeeping

A. The contractor shall provide documentation of labor, equipment, materials and disposal laboratory analysis used for soil removal, when requested by the Owner's Authorized Representative.

2.0 PRODUCTS

2.1 Removal

A. The contractor shall furnish all necessary means, products, tools, and equipment required to remove soil (including non-special waste soils and non-hazardous special waste soils), fill, backfill, CU structural soil/stone and/or construction and demolition debris from the site as directed by the Owner's Authorized Representative.

3.0 EXECUTION

3.1 Authorizations

A. Unless otherwise noted on the plans, contractor shall assume removal to subtitle D Landfill for material removal. Contractor is responsible for all documentation for material being removed from the site.

B. Obtain authorization from the permitted disposal facility owner where soils (including non-special waste soils and non-hazardous special waste soils), fill, backfill, CU structural soil/stone and/or construction and demolition debris are to be transported, stored, or disposed. The authorization must be signed by a facility representative and shall state that the facility has received a copy of one or more laboratory analyses of representative sample(s) collected from the site by the contractor and has agreed to accept the material. The authorization shall further state that the facility agrees to accept the material for permanent placement on their site and that the material will not be removed from their site unless required by a local, state or federal authority. The authorization shall further state that the facility complies with all local zoning codes, state, federal and local laws, rules, and regulations.

C. Obtain prior authorization from Authorized Representative to backfill excavations and utility lines, and apply topsoil. All backfill, CU structural soil/stone, and topsoil shall comply with site specific project specifications.

D. Haulers for transportation of soils, backfill and topsoil shall hold, and present upon request, a current valid Commercial Driver's License (CDL). Non-hazardous special wastes and hazardous wastes must be hauled by an IDOT-approved, licensed, and permitted transporter and must be visible during transportation.

3.2 Material Sampling

A. Soil, fill, backfill, CU structural soil, construction and demolition debris

1. The contractor shall collect sufficient amount of representative sample(s) from each type of material being removed from the site for analytical testing to obtain authorization for the ultimate disposition of the materials. The contractor is responsible for acquisition of any required permits and payment of all fees.
2. The contractor shall collect samples only from the excess materials that require offsite disposal. Under no circumstances shall the

contractor sample any material that is to remain onsite without authorization directly from the Owner.

3. The contractor shall be responsible for obtaining liquid samples as needed for characterization for liquid disposal offsite or disposition onsite as applicable. The contractor is responsible to the acquisition of any required disposal permits and the payment of any fees associated with liquid disposal.
4. The contractor shall submit the soil and liquid samples (as applicable) to the laboratory and pay for the cost of analyzing the constituents required for the ultimate disposition of soils and liquids.
5. The contractor may collect samples for laboratory analysis or field Photo-ionization Detector (PID) screening, or liquid samples for laboratory analysis.
6. The contractor shall immediately notify the Owner or Owner's representative if any materials, (solid or liquid) requiring special handling (i.e., stained soil, soil with odors, or liquids) are encountered.
7. All excavated soils, liquids, and other material shall be removed from the site in accordance with applicable federal, state, and local regulations.

3.3 Excavation

A. The contractor shall perform excavation of soils (including non-special waste soils and non-hazardous special waste soils), fill, backfill, CU structural soil/stone and/or construction and demolition debris as directed by the Owner's Representative.
B. All excavation shall be performed in accordance with OSHA requirements and guidelines. The contractor shall be responsible for its worker's health and safety.

3.4 Hauling

A. The contractor shall remove soils, dusts, rocks, etc. from the exterior of trucks, trailers, or other heavy equipment leaving the site before they leave the site.
B. The contractor shall clean the tractor-trailers or trucks that are loaded with materials for off site placement/salvage by removing clinging soils, or rocks from the exterior of the equipment.
C. The contractor shall not create dust and shall maintain adequate dust suppression equipment on site if conditions warrant.
D. The contractor shall maintain streets clean and free of mud and dirt.
E. The contractor shall conduct soil (including non-special waste soils and non-hazardous special waste soils), fill, backfill, CU structural soil/stone and/or construction and demolition debris removal in a manner that ensures minimum interference with roads; streets, walks and other adjacent occupied and used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from the applicable governing agency and Board

Authorized Representative. Provide alternate routes around closed or obstructed traffic ways if required by the governing agency.

3.5 Transportation

A. The contractor shall remove soils, dusts, rocks, etc. from the exterior of trucks, trailers, or other heavy equipment leaving the site before they leave the site. The contractor shall provide complete copies of all daily reports, weight tickets and receipts (as applicable) for transportation and ultimate off site placement of materials removed from the property to the Board Authorized Representative, review and signature as required.

3.6 Dust Control

A. The contractor shall control dust by all necessary means, including but not limited to covering trucks, stockpiles and open materials, watering haul roads, sweeping paved roads, and limiting the speed of all on-site vehicles.

3.7 Liquid (Water) Management

A. The contractor shall subscribe to a weather notification system and manage the work so as not to accumulate storm water on the site during excavation.

B. The contractor shall ensure that contamination of water, perched water and previously uncontaminated water or perched water does not occur by preventing the contact of such liquid with materials that exceed Title 35: Environmental Protection Subtitle G: Waste Disposal Chapter I: Pollution Control Board Subchapter F: Risk Based Cleanup Objectives, Part 742, Tiered Approach To Corrective Action Objectives, Appendix B, Table A values for 35 ILL. ADM CODE 740 APPENDIX A Target Compound List (TCL) parameters. Earthen berms, plastic (polyethylene) sheeting, pumping, and other such means may be used as needed to prevent contaminated water.

C. If the contractor, through negligence, allows storm water to contact materials that exceed Title 35: Environmental Protection Subtitle G: Waste Disposal Chapter I: Pollution Control Board Subchapter F: Risk Based Cleanup Objectives, Part 742, Tiered Approach To Corrective Action Objectives, Appendix B, Table A values for 35 ILL. ADM CODE 740 APPENDIX A Target Compound List (TCL) parameters, the water must be disposed of as water that exceeds Title 35: Environmental Protection Subtitle G: Waste Disposal Chapter I: Pollution Control Board Subchapter F: Risk Based Cleanup Objectives, Part 742, Tiered Approach To Corrective Action Objectives, Appendix B, Table A values for 35 ILL. ADM CODE 740 APPENDIX A Target Compound List (TCL) parameters. The contractor will be responsible for the additional costs incurred for any disposal analysis and disposal costs.

3.8 Quality Control

A. Visual inspections and damage repairs shall be made daily by the contractor and/or as directed by the Owner’s Authorized Representative to assure that erosion, drainage and containment control measures are functioning properly.

B. The contractor shall take all necessary precautions to protect structures, equipment, pavement, walks and utilities against movement or settlement during the course of work.
C. Damages: Promptly replace or repair any damage caused to adjacent pavement, utilities or facilities by removal operations at no additional cost. Work shall be performed to the satisfaction of the Board Authorized Representative.
D. Utility services: Maintain existing utilities and protect against damage during removal operations.

END OF SECTION

SECTION 01 5713
EROSION CONTROL

1.0 GENERAL

1.1 Description

A. Erosion Control shall consist of furnishing all labor, materials, tools and equipment necessary to place riprap material, silt fencing, erosion control blankets and triangular silt dikes in the locations indicated on the drawings.

1.2 Incorporated Specifications

A. The following specifications are incorporated into the document

1. "Standard Specifications for Road and Bridge Construction" – latest edition - Illinois Department of Transportation
    a. Section 280 Temporary Erosion Control
    b. Article 1005.01 Stone for Erosion Protection, Sediment Control and Rockfill
    c. Article 1081.10 Special Erosion Control Materials
    d. Article 251.04 Erosion Control Blanket
2. Contractor shall adhere to the above specifications unless applicable items of work or materials are modified herein.

2.0 MATERIALS

2.1 Riprap

A. Riprap fill shall consist of sound, durable cobbles and crushed rock having a maximum diameter of eight inches (8") as measured in the smallest dimension. Riprap shall be well graded and meet the gradation requirements for RR3 in accordance with the above referenced and incorporated specification.

2.2 Silt Fence

A. Silt fence shall be polypropolyne fabric. Stakes for silt fence shall be wooden or metal and at least five feet (5') long.

2.3 Erosion Control Blanket

A. 3:1 and Greater Slopes shall be Curlex I Single Net. As manufactured by:

1. American Excelsior Company, 850 Avenue H East, Arlington, Texas 76011, (800) 777-7645
    a. All staples shall be E-Staple, 4-inch bio-degradable. As manufactured by: American Excelsior Company OR www.Greenstake.com

B. Erosion control blanket shall be approved by the Department of Transportation. All netting shall be single sided and white UV reactive. Netting shall begin to bio-degrade within 15-18 months of installation. Netting shall have an opening between 1/2" x 1/2" and 2" x 1". Staple shall be 100% Polyhydroxyalkanoate (PHA) plastic, biodegradable from microbial activity in accordance to ASTM D5338 and ASTM D5271. Staples shall completely biodegrade within 24 months of installation. Staples shall be 4 inches (4") in length, T-Shaped and have barbed head and shoulders.

2.4 Triangle Silt Dike Barrier

A. Triangular silt dike barrier shall be urethane foam and geotextile fabric and shall have protective aprons on both sides of the barrier. Barrier shall be eight inches (8”) wide.

3.0 EXECUTION

3.1 Riprap Installation

A. Riprap shall be placed in a twelve inch (12”) thick layer or as shown on the drawings or as directed by Owner and worked as required to provide a well graded matrix of stone pieces.

3.2 Silt Fence

A. Silt fencing shall be placed in the locations shown on the plans and in accordance with the above incorporated specifications. Staking shall be a minimum of eight feet (8') apart. Silt fence shall remain in place for the duration of the construction project and shall only be removed with prior approval.

3.3 Erosion Control Blanket

A. Erosion control blankets shall be placed in accordance with the above incorporated specifications. Before barrier installation, ensure areas to be covered are smooth and free of ruts, depressions, rocks or clods over eighteen inches (18”) in diameter, sticks and any other debris that will prevent contact between the blanket and soil. Erosion control blanket to be installed within 24 hours after seeding. Staking shall be a minimum of six feet (6') apart and staked per the manufacturer’s instructions.

3.4 Triangular Silt Dike Barrier

A. Triangular silt dike barrier shall be placed in the locations shown on the plans and in accordance with the above incorporated specifications.

B. Secure triangular silt dike by burying the first six inches (6”) of the leading edge apron in a two to three inch trench. 4 to 5 staples shall be used on the front apron and 4 to 5 staples shall be used on the rear apron on each seven foot (7’) section. Water flow is not allowed under the barrier.

C. The barrier shall remain in place for the duration of the construction project and shall only be removed with prior approval. Contractor shall routinely inspect and maintain the barrier. Contractor to ensure that barrier is free of accumulated silt, debris, and other miscellaneous material. Accumulated sediment deposit shall be removed if more than eight inches (8”). Torn or punctured barrier shall be repaired or replaced as directed by the Owner’s Representative.

D. Contractor shall be required to obtain approval for removal of silt fence. Remove fence, take off site, fill in trenches with topsoil, seed, cover with blanket, and roll as needed to match existing grade and conditions.

END OF SECTION

SECTION 01 7300
EXECUTION REQUIREMENTS

1.0 GENERAL

1.1 Summary

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. General installation of products.
3. Progress cleaning.
4. Starting and adjusting.
5. Protection of installed construction.
6. Correction of the Work.

2.0 PRODUCTS (Not Used)

3.0 EXECUTION

3.1 Examination

A. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of storm sewer, and sanitary sewer.
2. Verify location of existing water lines, electric and private utilities.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of conditions.

3.2 Preparation

A. Field Measurements: Take field measurements as required to fit the Work properly. Re-check measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Owner's Representative. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 Construction Layout

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Owner promptly.

B. General: Lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated.
3. Inform installers of the lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Owner when deviations from required lines and levels exceed allowable tolerances.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures. Transfer survey markings and elevations for use with control lines and levels. Level foundations from two or more locations.

3.4 Field Engineering

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

3.5 Installation

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

D. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

E. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 Progress Cleaning

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80° F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period.

I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 Protection of Installed Construction

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

3.8 Correction of the Work

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

3.9 Substantial Completion

A. Contractor shall inform Owner/Owner’s Rep when they feel Substantial completion has been reached. The Owner/Owner’s Rep shall review work with the Contractor and approve or require further correction of the work.

END OF SECTION

SECTION 01 7700
PROJECT CLOSEOUT

1.0 CLEANING UP

1.1 Contractors shall, prior to punch list preparation, remove trash and debris and clean all walks, drives and parking areas.

1.2 Upon completion of work, Contractor shall remove all temporary structures, fences, surplus materials, and rubbish of every kind from site and dispose of legally, except in cases where permits require silt fences to remain.

1.3 If Contractor fails to clean up, the Owner may do so and the cost thereof shall be charged to the Contractor as provided in the General Conditions.

2.0 AS-BUILT DRAWINGS/SPECIFICATIONS

2.1 Contractor shall maintain one set of Drawings and one set of bound specifications on which he/she shall record every deviation that is made from original drawings and specifications at the time the change is made.

2.2 Contractor shall keep a neat and complete record of exact manner in which all work is installed. Dimensions shall be included to accurately locate items that will be concealed and which may later be necessary to locate for service.

2.3 This record set of drawings and specifications shall be kept by Contractor at the job site for inspection by the Owner and the Owner's Representative.

2.4 At completion of the Work, Contractor shall arrange above records in order properly indexed and certify by endorsement thereof that each of the revised drawings and specifications is complete and accurate.

2.5 Before final payment is made, the Contractor shall deliver the annotated as-built drawings and specifications to the Owner's Representative. The as-built drawings and specifications created by the Contractor at all times remain the property of the Owner.

2.6 No review or receipt of such records by the Owner or the Owner's Representative of any deviation from the Contract Documents does in any way relive the Contractor from his/her responsibility to perform the work in accordance with the Contract Documents

2.7 Where indicated on the Drawings, as-built drawings shall be a topographic survey that is prepared and sealed by an Illinois licensed surveyor. See Drawings for additional requirements. Items 2.1 through 2.6 above shall also apply.

3.0 PUNCH LIST

3.1 Upland Design Ltd. and the Owner shall make a final inspection of work after Contractor notifies the Owner that work is substantially complete. The Contractor will be notified in writing of incomplete and/or unaccepted items in a written punch list. These items, if any, are to be corrected or completed before final acceptance is granted by Owner. Failure of the Owner's Representative to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Following Contractor completion of all punch list work, Owner shall provide a written notice of final acceptance to Contractor.

4.0 MAINTENANCE AND OPERATION INSTRUCTION

4.1 Prior to final payment, Contractor shall arrange all technical instruction of Owner's maintenance personnel, either by his/her own or the equipment manufacturer's personnel.

5.0 GUARANTEES

5.1 The Contractor shall guarantee all workmanship and materials, including plant material for a period of one (1) year from the date of the final acceptance letter, except where certain guarantees are otherwise specified in writing to be longer than one year.

5.2 At the completions of the work, all such guarantees covering material, workmanship, maintenance, etc., as specified, shall be procured by the Contractor from the various suppliers and subcontractors, and forwarded to the Owner, together with a letter, addressed to the Owner, giving a summary of guarantees attached stating, the character of work, name of the Contractor, name of the material or equipment supplier, period of guarantee and condition of guarantee. This shall be done within fifteen (15) days of the punch list date.

5.3 Neither the final payment nor termination of the guarantee period, nor any provision in the Contract Documents, shall relieve the Contractor of the responsibility for negligence, faulty materials or workmanship within the extent and period provided by law. Upon written notice, the Contractor shall remedy any defects, and shall pay all expenses for damage to other work resulting from that defect.

5.4 If the drawings and/or specifications provide for methods of construction and installation, or materials which cannot be guaranteed by the Contractor for the indicated period, the Contractor shall so inform the Owner in writing prior to submitting a bid. Otherwise the Contractor shall guarantee all methods of construction and installation, and materials for the indicated period of time.

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 DEFINITIONS

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

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

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.

1.4 INFORMATIONAL SUBMITTALS

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

B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109 for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.5 QUALITY ASSURANCE

A. Sample Panels: Build sample panel in section of exposed masonry to show raked joints, plumbness and overall aesthetic of finish product. Panel can be provided during course of construction. Notify architect for review as to not impede construction process.

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.

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. CMUs: ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.
2. Density Classification: Normal weight unless otherwise indicated].

2.3 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C 207, Type S.

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

D. Masonry Cement: ASTM C 91.

E. Aggregate for Mortar: ASTM C 144.

1. White-Mortar Aggregates: Natural white sand or crushed white stone.

F. Aggregate for Grout: ASTM C 404.

G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

H. Water: Potable.

2.4 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A 615 or ASTM A 996, Grade 60.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

C. Masonry-Joint Reinforcement, General: ASTM A 951.

1. Interior Walls: Hot-dip galvanized, carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: 0.148-inch diameter.
4. Wire Size for Cross Rods: 0.148-inch diameter.
5. Spacing of Cross Rods: Not more than 16 inches o.c.
6. 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 A 82, with ASTM A 153, Class B-2 coating.
2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008, Commercial Steel, with ASTM A 153, Class B coating.
3. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- diameter, hot-dip galvanized-steel wire.
2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- diameter, hot-dip galvanized-steel wire.

2.6 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with Section 076200 "Sheet Metal Flashing and Trim" and as follows:

1. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
2. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
3. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.

B. Flexible Flashing: Use the following unless otherwise indicated:

1. 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 0.040 inch.

C. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."

D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

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. 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 C 270, Property 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 M.
2. For reinforced masonry, use Type S.
3. For mortar parge coats, use Type S.
4. 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.
5. For interior nonload-bearing partitions, Type O may be used instead of Type N.

D. Grout for Unit Masonry: Comply with ASTM C 476.

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 C 476, Table 1.
3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.

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. 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 6 inches into masonry at each end. At heads and sills, extend flashing 6 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.

3.7 REINFORCED UNIT MASONRY INSTALLATION

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.

3.8 FIELD QUALITY CONTROL

A. Testing and Inspecting: Contractor to 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 Contractor's expense.

B. Inspections: Special inspections according to Level **2 or 3** in TMS 402 and TMS602 as indicated on the drawings

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.

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

D. Testing Frequency: As indicated on the drawings

E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.

F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.

G. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for compressive strength.

H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

I. Prism Test: For each type of construction provided, according to ASTM C 1314 at seven days and at 28 days.

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

K. 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 042200

SECTION 044313 – ANCHORED STONE MASONRY VENEER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stone Masonry Anchored to Unit Masonry Backup

B. Related Requirements:

1. Section 0420000 “Unit Masonry” for concealed flashing and veneer Anchors

1.2 ACTION SUBMITTALS

A. Product Data: For stone, stone accessory and manufactured product

B. Samples for Verification: For stone and color of Mortar

1.3 FIELD CONDITIONS

A. Protection of stone Masonry: During construction, cover tops of walls, projections and sills with weather proof sheeting at end of each day’s work

B. Cold weather requitements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
1. Cold-weather cleaning: Use liquid cleaning methods only when air temperature is 40 deg F. and above and will remain so until masonry has dried

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

PART 2 - PRODUCTS

2.1 Stone: As specified on construction documents, 4 inches plus or minus ¼ inch. Thickness does not include projection of pitched faces

2.2 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime: ASTM C 207, Type S.

C. Masonry Cement: ASTM C 91.

D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.

E. Aggregate for Mortar: ASTM C 144.

1. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
2. White-Mortar Aggregates: Natural white sand or crushed white stone.
3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Aggregate for Grout: ASTM C 404.

G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

H. Water: Potable.

2.3 REINFORCEMENT

A. Masonry-Joint Reinforcement, General: ASTM A 951.

1. Exterior Walls: Hot-dip galvanized carbon steel.
2. Wire Size for Side Rods: 0.148-inch diameter.
3. Wire Size for Cross Rods: 0.148-inch diameter.
4. Wire Size for Veneer Ties: 0.148-inch diameter.
5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

B. Masonry-Joint Reinforcement for Multiwythe Masonry:

1. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch and maximum vertical adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face. Ties have hooks or clips to engage a continuous horizontal wire in the facing wythe.

2.4 TIES AND ANCHORS

A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Adjustable Masonry-Veneer Anchors:

1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.075-inch- thick steel sheet, galvanized after fabrication.
3. Fabricate wire ties from 0.187-inch- diameter, hot-dip galvanized-steel wire unless otherwise indicated.
4. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a gasketed sheet metal anchor section, with pronged legs of length to match thickness of insulation or sheathing and raised rib-stiffened strap to provide a slot for inserting wire tie.

2.5 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with Section 076200 "Sheet Metal Flashing and Trim" and as follows:

1. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
2. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
3. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.

B. Flexible Flashing: Use the following unless otherwise indicated:

1. 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 0.040 inch.

2.6 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Weep/Cavity Vent Products: Use the following unless otherwise indicated:
1. Wicking Material: Absorbent rope, made from cotton or UV-resistant synthetic fiber, 1/4 TO 3/8 INCH in diameter, in length required to produce 2-INCH exposure on exterior and 18 INCHES in cavity behind stone masonry. Use only for weeps.

E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Configuration: Provide one of the following:

a. Strips, full depth of cavity and 10 inches high, with dovetail shaped notches 7 inches deep that prevent clogging with mortar droppings.

2.7 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

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. 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 Stone Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. Mortar for setting Stone: Type N.
2. Mortar for pointing Stone: Type N.
3. For mortar parge coats, use Type S.

D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Pigments shall not exceed 5 percent of [masonry cement] [or] [mortar cement] by weight.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coat unit masonry backup with asphalt dampproofing.

B. Perform necessary field cutting and trimming as stone is set.

C. Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edges eased slightly to prevent snipping.

D. Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.

E. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.

F. Arrange stones in three-course, random-range ashlar pattern with random course heights, random lengths (interrupted coursed), and uniform joint widths.

G. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.

H. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any. Lay walls with joints not less than 1/4 INCH at narrowest points or more than 1/2 INCH at widest points.

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. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 INCH IN 10 FEET, 3/8 INCH IN 20 FEET, or 1/2 INCH IN 40 FEET or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 INCH IN 20 FEET or 1/2 INCH IN 40 FEET or more.
2. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 INCH IN 20 FEET or 1/2 INCH IN 40 FEET or more.
3. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 INCH IN 20 FEET or 3/4 INCH IN 40 FEET or more.

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 MORTAR BEDDING AND JOINTING

A. Lay stone masonry units 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.

B. Rake out mortar joints to a uniform depth of 1/2 inch and point with.

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

3.4 INSTALLATION OF ANCHORED STONE MASONRY

A. Anchor stone masonry to unit masonry with wire anchors unless otherwise indicated. Connect anchors to masonry joint reinforcement by inserting pintles into eyes of masonry joint reinforcement projecting from unit masonry.

B. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 INCHES, through stone masonry and with at least a 5/8-INCH cover on exterior face.

C. Space anchors not more than 18 INCHES o.c. vertically and 32 INCHES o.c. horizontally, with not less than one anchor per 2.67 SQ. FT. of wall area. Install additional anchors within 12 INCHES of openings, sealant joints, and perimeter at intervals not exceeding 12 INCHES.

D. Set stone in full bed of mortar with full head joints unless otherwise indicated. Build anchors into mortar joints as stone is set.

E. Provide 1-INCH cavity between stone masonry and backup construction unless otherwise indicated. Keep cavity free of mortar droppings and debris.

F. Slope beds toward cavity to minimize mortar protrusions into cavity.

G. Do not attempt to trowel or remove mortar fins protruding into cavity.

3.5 FLASHING, WEEP HOLES, AND CAVITY VENTS

A. Install embedded flashing and weep holes at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. At multiwythe masonry walls, including cavity walls, extend flashing through stone masonry, turned up a minimum of 12 INCHES, and extend into or through inner wythe to comply with requirements in Section 042000 "Unit Masonry."

C. At lintels and shelf angles, extend flashing full length of angles but not less than 6 INCHES into masonry at each end.

D. At sills, extend flashing not less than 4 INCHES at ends.

E. At ends of head and sill flashing, turn up not less than 2 INCHES to form end dams.

F. Install metal drip edges beneath flexible flashing at exterior wall face. Stop flexible flashing 1/2 INCH back from exterior wall face and adhere flexible flashing to top of metal drip edge.

G. Place weep holes and vents in joints where moisture may accumulate, including at base of cavity walls, above shelf angles, and at flashing.

H. Use wicking material to form weep holes above flashing in stone sills. Turn wicking down at lip of sill to be as inconspicuous as possible.

I. Space weep holes 24 INCHES o.c.

J. Trim wicking material used in weep holes flush within 1/2” of exterior wall face after mortar has set.

K. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

L. Install vents in head joints at top of each continuous cavity at spacing indicated. Use mesh weep holes/vents or open head joints to form vents.

3.6 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. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
3. Protect adjacent surfaces from contact with cleaner.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION 042000

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber (Glu-Lams).
2. Wood blocking and nailers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Power-driven fasteners.
2. Post-installed anchors.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 15 percent unless otherwise indicated.

2.2 DIMENSION LUMBER FRAMING

A. Miscellaneous framing as indicated on Construction drawings

1. Application: Framing other than interior partitions not indicated as load bearing.
2. Species:

a. Southern pine; SPIB.
b. Douglas fir-larch; WCLIB or WWPA.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.

B. Concealed Boards: 15 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 2 grade; SPIB.

2.4 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Fasteners, including nuts and washers, in contact with preservative-treated wood shall be hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, class 55 minimum. Connectors that are used in exterior applications and in contact with preservative-treated wood shall have coating types and weights in accordance with the treated wood or connector manufacturer's recommendations. In the absence of the manufacturer's recommendations, a minimum of ASTM A653, Type G185 zinc-coated galvanized steel, or equivalent, shall be used. EXCEPTION: Plain carbon steel fasteners, including nuts and washers, in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall be permitted

B. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

C. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC308 as appropriate for the substrate.

2.5 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

B. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.

D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Do not splice structural members between supports unless otherwise indicated.

F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. ICC-ES evaluation report for fastener.

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior wood trim.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Samples: For each exposed product and for each color and texture specified.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with applicable rules of any rules-writing agency certified by the American Lumber Standard Committee's (ALSC) Board of Review. Grade lumber by an agency certified by the ALSC's Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of inspection agency, indicating grade, species, moisture content at time of surfacing, and mill.
2. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.

2.2 EXTERIOR TRIM

A. Lumber Trim for **Semitransparent-Stained Finish**.
1. Species and Grade: Western red cedar; NLGA, WCLIB, or WWPA Clear Heart for trim and No2 & better for timber members
2. Maximum Moisture Content: 15 percent with at least 85 percent of shipment at 12 percent or less.
3. Finger Jointing: not allowed
4. Face Surface: **smooth - clear**

2.3 WOOD SOFFITS

A. Provide kiln-dried wood soffits complying with DOC PS 20

B. Species and Grade: Western red cedar; NLGA, WCLIB, or WWPA **Grade B**.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate.

B. Flashing: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim" for flashing materials installed in exterior finish carpentry.

C. Sealants: Latex, complying with ASTM C 834 Type OP, Grade NF and applicable requirements in Section 079200 "Joint Sealants," and recommended by sealant and substrate manufacturers for intended application.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

3.2 INSTALLATION, GENERAL

A. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials.

1. Use concealed shims where necessary for alignment.
2. Scribe and cut exterior finish carpentry to fit adjoining work.
3. Refinish and seal cuts as recommended by manufacturer.
4. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
5. Coordinate exterior finish carpentry with materials and systems in or adjacent to it.
6. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.3 STANDING AND RUNNING TRIM INSTALLATION

A. Install flat-grain lumber with bark side exposed to weather.

B. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 48 inches long, except where necessary.

1. Use scarf joints for end-to-end joints.
2. Stagger end joints in adjacent and related members.

C. Fit exterior joints to exclude water.

1. Cope at returns and miter at corners to produce tight-fitting joints, with full-surface contact throughout length of joint.
2. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.

D. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.

E. Flashing: Install metal flashing as indicated on Drawings and as recommended by siding manufacturer.

F. Finish: Apply finish within two weeks of installation.

END OF SECTION 062013

SECTION 071900 - WATER REPELLENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:
   1. Concrete unit masonry.
   2. Natural stone.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of water repellent and substrate indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENTS

A. Silane/Siloxane-Blend, Penetrating Water Repellent: Clear, silane and siloxane blend with 400 g/L or less of VOCs.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.

   1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in representative locations by method recommended by manufacturer.
   2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.

3. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

3.2 PREPARATION

A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, according to repellent manufacturer's written instructions.

B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions.

C. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.

D. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.3 APPLICATION

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. Apply coating of water repellent on surfaces to be treated using low-pressure spray to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.

C. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.4 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application.

B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071900

SECTION 073113 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Asphalt shingles.
2. Underlayment.
3. Metal flashing and trim.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Evaluation reports.

C. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.

1. Material Warranty Period: Manufacturer’s standard.
2. Wind-Speed Warranty Period: Manufacturer’s standard.
3. Algae-Resistance Warranty Period: Manufacturer’s standard.
4. Workmanship Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance according to ASTM E 108 or UL 790 by Underwriters Laboratories, Inc. or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

A. Laminated-Strip Asphalt Shingles: ASTM D 3462, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.

1. Butt Edge: **Straight**.
2. Strip Size: Manufacturer's standard.
3. Algae Resistance: Granules resist algae discoloration.
4. Impact Resistance: UL 2218, Class 4.
5. Color and Blends: As selected by Architect from manufacturer's full range.

B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.3 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226 asphalt-saturated organic felts, nonperforated.

1. Type: Type I – two layer, or Type II – one layer.

2.4 ACCESSORIES

A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- diameter, sharp-pointed, with a minimum 3/8-inch- diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.

1. Shank: Barbed.
2. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

C. Felt-Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire with low-profile capped heads or disc caps, 1-inch minimum diameter.

2.5 METAL FLASHING AND TRIM

A. General: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

B. Double-Layer Felt Underlayment: Install on roof deck with succeeding courses lapping previous courses 19 inches in shingle fashion. Lap ends a minimum of 6 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with felt-underlayment nails.
   1. Install felt underlayment on roof sheathing
   2. Install fasteners at no more than 36 inch o.c.

3.2 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."

   1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

3.3 ASPHALT-SHINGLE INSTALLATION

A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

B. Install starter strip along lowest roof edge, consisting of an asphalt-shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.

   1. Extend asphalt shingles 1/2 inch over fasciae at eaves and rakes.
   2. Install starter strip along rake edge.

C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

D. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

E. Install asphalt shingles by single-strip column or racking method, maintaining uniform exposure. Install full-length first course followed by cut second course, repeating alternating pattern in succeeding courses.

F. Fasten asphalt-shingle strips with roofing nails located according to manufacturer's written instructions.
   1. When ambient temperature during installation is below 50 deg F, seal asphalt shingles with asphalt roofing cement spots.

G. Ridge Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

END OF SECTION 073113

SECTION 09 9108
EXTERIOR PAINTING- concrete surfaces

1.0 GENERAL

1.01 DESCRIPTION OF WORK

A. The extent of painting work is shown on the drawings and as herein specified.
B. The work includes: Preparation and painting exterior concrete surfaces. Prepare samples as required by Owner/Owner's representative.
C. Protect all adjacent areas not to be painted with cloths or canvas at all times, to prevent drips.

1.03 QUALITY ASSURANCE

A. Painting Contractor:
   1.The subcontractor shall have not less than five years successful experience with exterior painting. A statement of experience that includes project addresses and owner contact information may be required prior to the start of painting work. A current point-of-contact for identified references shall be provided.
   2. The painting Contractor shall possess current SSPC–QP1 certification for lead-free paint. The Contractor shall maintain certified status throughout the duration of the painting work under the contract. The Owner reserves the right to accept Contractors documented to be currently enrolled in the SSPC-QP7, Painting Contractor Introductory Program, Category 2, in lieu of the QP certifications noted above. The Owner at their sole discretion may accept proof of other commercial painting training and experience as qualification for performing work at the project site.

1.04 SUBMITTALS:

A. Submit one copy of manufacturer's specifications, including paint label analysis for each material specified.
B. Submit paint color samples that match owner's color selection for approval by Owner/Owner's representative.
C. Submit final record of daily moisture readings made by Painter as specified in Job Conditions 1.06 A.
D. Submit evidence of current SSPC-QP1Certification Status for Painting Contractor

1.05 DELIVERY AND STORAGE:

A. Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label.

1.06 JOB CONDITIONS:

A. Do not apply exterior paint materials during the months of November through April. Do not apply exterior paint materials when the temperature of surfaces to be painted and the surrounding air temperatures are below 50 degrees F. or expected to drop below 50 degrees F. for 48 hours after application, or above 85 degrees F. Contractor must furnish and use a handheld moisture meter to determine the moisture content of wood surfaces.
B. Do not apply paint materials in snow, rain, fog, or mist, or when the relative humidity exceeds 80% or to damp or wet surfaces.

C. Do not paint over any labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates, where painting will obscure text or symbols.
D. Concrete shall have cured for 30-60 days prior to painting.

2.0 PRODUCTS

2.01 COLORS AND FINISHES

A. Prior to beginning work, the Owner’s Representative will furnish sample color chips if color is not to match an existing color for surfaces to be painted. Match the colors of the chips and submit samples, as specified herein, before proceeding with the work.

2.02 MATERIAL QUALITY EXTERIOR PAINTING

A. Provide the best quality grade of the various types of coatings as regularly manufactured by approved paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
B. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

2.03 PAINT MATERIALS:

A. Paint shall be a premium quality, 100% acrylic exterior low luster latex finish suitable for exterior use on concrete.
B. Primer shall be a preparatory coating to create a less porous, smoother painting surface.
C. Approved Manufacturer:
    a. Paint/Finish: Benjamin Moore Aura Waterborne Exterior Paint Low Luster Finish 634, Colors and design shall be per plans.
    b. Primer: Benjamin Moore Super Spec Masonry Interior/Exterior Hi-Build Block Wall Filler 206, Primer shall be tinted to coordinate with base color.
D. Apply a minimum of two coats of finish.

3.0 EXECUTION

3.01 INSPECTION

A. The Applicator must examine the areas and conditions under which painting work is to be applied. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator.
B. Starting of painting work will be construed as the Applicator's acceptance of the surfaces and conditions within any area.
C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

3.02 SURFACE PREPARATION

A. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified for each particular condition:
B. All concrete surfaces need to be washed with a pressure washer with a mildewcide solution formulated for pressure washers. Follow manufacturer’s recommendations and rinse solution from surface.
C. Any remaining mildew or staining may require hand scrubbing with a stiff bristle brush and cleaner.

D. After concrete has been cleaned and dry, prepare the surface for painting by cleaning with a Trisodium Phosphate Mix. Follow manufacturer mixing and safety instructions carefully. Rinse surface after clean.
E. Protection of adjoining surfaces: Remove or protect hardware, hardware accessories, machined surface, plates, lighting fixtures, roofing and similar items not to be painted.
F. In all areas designated for painting, the concrete surfaces shall be high power pressure washed to etch the surface of the concrete. Only areas to be painted shall be etched.
G. Contractor is responsible for replacing and correcting any surfaces not intended for painting that are damaged as part of this work.
H. NO painting shall be done until surface preparation is accepted by Owner's Representative.

3.03 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.
B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in a clean condition, free of foreign materials and residue.
C. Stir materials before application to produce a mixture of uniform density and stir as required during the application of the materials.

3.04 APPLICATION

A. Before painting, apply a primer in accordance with the manufacturer's directions.
B. Apply paint materials in accordance with the manufacturer's directions. Do not use any type of spraying device to apply paint. All paint must be roller or brush-applied unless otherwise agreed to in writing by the Owner's Representative.
C. Apply paint materials so as to completely cover all surfaces with an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, laps, brush marks, runs, sags or other surface imperfections will not be acceptable.
D. Remove, refinish, or repaint work not in compliance with specified requirements.

3.05 CLEAN-UP AND PROTECTION

A. During the progress of the work, remove from the project daily all discarded paint materials, rubbish, cans and rags. No paint materials shall be allowed to be kept within the structure itself for any reason.
B. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damages by cleaning, repairing or replacing and repainting, as directed by the Owner's Representative.
C. Protect all non-painted surfaces adjacent to, and below, painting operations. Protection to consist of large cloth, canvas or plastic sheet materials to completely cover building stone and/or foundation.
D. Provide "Wet Paint" signs, as required to protect newly-painted finishes.
A. Upon completion of painting work, clean all paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
E. General Contractor is to coordinate site work so that loose soil and blowing dirt from grading and excavation operations do not conflict with paint application.

END OF SECTION 09 9108

SECTION 099300 - STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and application of wood stains and transparent finishes.

1. Exterior Substrates:
    a. Exposed framing and trim
    b. Exposed plank

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples: For each type of finish system and in each color and gloss of finish required.

1.3 QUALITY ASSURANCE

A. Mockups: Apply mockups of each finish system indicated and each color selected to verify preliminary selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Final approval of stain color selections will be based on mockups.

    a. If preliminary stain color selections are not approved, apply additional mockups of additional stain colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Provide (3) control sample using stain listed on Exterior Material legend in the Construction Documents. If alternate stain manufactures are contemplated, provide (3) samples WITH control sample for comparison

2.2 MATERIALS, GENERAL

A. Stain Colors: As selected and stated in the construction documents.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with finish application only after unsatisfactory conditions have been corrected.

1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.

1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.

1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

3.3 APPLICATION

A. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 EXTERIOR WOOD-FINISH-SYSTEM SCHEDULE

A. Wood Substrates: Exposed framing.

1. Water-Based Semitransparent Stain System:

a. Prime Coat: Stain, exterior, water based, semitransparent, matching topcoat.
b. Intermediate Coat: Stain, exterior, water based, semitransparent, matching topcoat.
c. Topcoat: Stain, exterior, water based, semitransparent.
d.

B. Wood Substrates: Wood-based plank products.

1. Water-Based Semitransparent Stain System:

a. Prime Coat: Stain, exterior, water based, semitransparent, matching topcoat.
b. Intermediate Coat: Stain, exterior, water based, semitransparent, matching topcoat.
c. Topcoat: Stain, exterior, water based, semitransparent
d. Topcoat: Varnish, with UV inhibitor, exterior, low sheen
e. Topcoat: Varnish, marine spar, exterior, low sheen

END OF SECTION 099300

SECTION 11 6814
FITNESS EQUIPMENT – Contractor purchase equipment

1.0 GENERAL

1.1 Description

A. The Contractor **IS NOT** responsible for the purchase of the fitness equipment to be installed in this bid.

B. Fitness equipment shall consist of all labor, equipment and materials necessary for complete installation of fitness equipment.

C. As part of this work, the Contractor shall coordinate with manufacturer delivery and secure storage of all equipment. Contract bid includes the coordination and labor necessary to install a complete system. This shall also include checking freight tickets, providing a copy to the Owner's Representative and inspection of items shipped.

1.2 Specifications and Standards

A. Fitness equipment installation shall conform to the most current standard:

1. ASTM F3101-Specification for Unsupervised Public Use Outdoor Fitness Equipment
2. ASTM F1292-Specification for Attenuation of Surface Systems Under and Around Playground Equipment
3. ASTM F1749-Specification for Fitness Equipment and Fitness Facility Safety Signage and Labels
4. ASTM F1951-Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment
5. ASTM F2276-Specifiation for Fitness Equipment
6. ASTM 2571-Test Methods for Evaluating Design and Performance Characteristics of Fitness Equipment
7. United States Consumer Product Safety Commission Handbook for Public Playground Safety, latest publication
8. American with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities: Play Areas: Final Rule

1.3 Submittals

A. Provide copy of freight ticket for equipment to Owner/Owner’s representative.

2.0 MATERIALS

2.1 Fitness Equipment

A. All equipment shall be as designated on the plans or approved equal. The Contractor shall not modify equipment.

3.0 EXECUTION

3.1 Installation

A. All equipment detailed on the drawings and specified herein shall be installed per manufacturer’s specifications and recommendations, unless otherwise described specifically herein, or on the plans.

B. Contractor shall obtain instructions for proper installation from the specific manufacturer. If any manufacturer does not provide installation specifications after request by the Contractor, the Owner’s representative shall be notified before installation occurs.

C. Contractor shall uncrate, inspect, clean and assemble all fitness equipment as necessary to install complete and usable items. If there are discrepancies with the items shipped, the Contractor is responsible for coordination of obtaining the correct materials at no cost to the Owner.

D. Concrete footings shall be installed at all fitness equipment. Concrete shall

conform to concrete specification. Footings shall be dimensioned as per the manufacturer's specification and/or the plans and details, which ever specifies the larger dimensions.

E. Contractor shall be responsible for trimming all bolts and other similar fastener items to meet specifications noted herein. Contractor shall ensure all tags, staples and stickers are removed from play equipment except for those required by incorporated specifications and standards.

END OF SECTION

SECTION 12 9300
SITE FURNITURE – Contractor purchase site furniture

1.0 GENERAL

1.1 Description

Note – The Contractor **SHALL BE** responsible for the purchase of all site furniture as described on the plans.

A. This work shall consist of all labor, equipment and materials necessary for complete installation of all specified site furniture. Site furniture that is specified in and around play areas shall also conform to SECTION 11 6813, Playground Equipment.

B. As part of this work, the Contractor shall coordinate with Owner for delivery, and storage of site furniture. Contract bid includes the coordination and labor necessary to install site furniture completely. This shall also include checking freight ticket, providing a copy to the Owner's representative, and inspection of items shipped. Contractor to provide secure storage of equipment prior to installation. In the event of damaged or missing parts, the Contractor shall immediately notify the distributor/vendor and the Owner.

1.2 Submittals

A. Provide copy of freight ticket to Owner/owner's representative

2.0 MATERIALS

2.1 Site Furniture

A. All site furniture shall be as designated on the plans or approved equals as per the Specifications. The Contractor shall not modify site furniture.

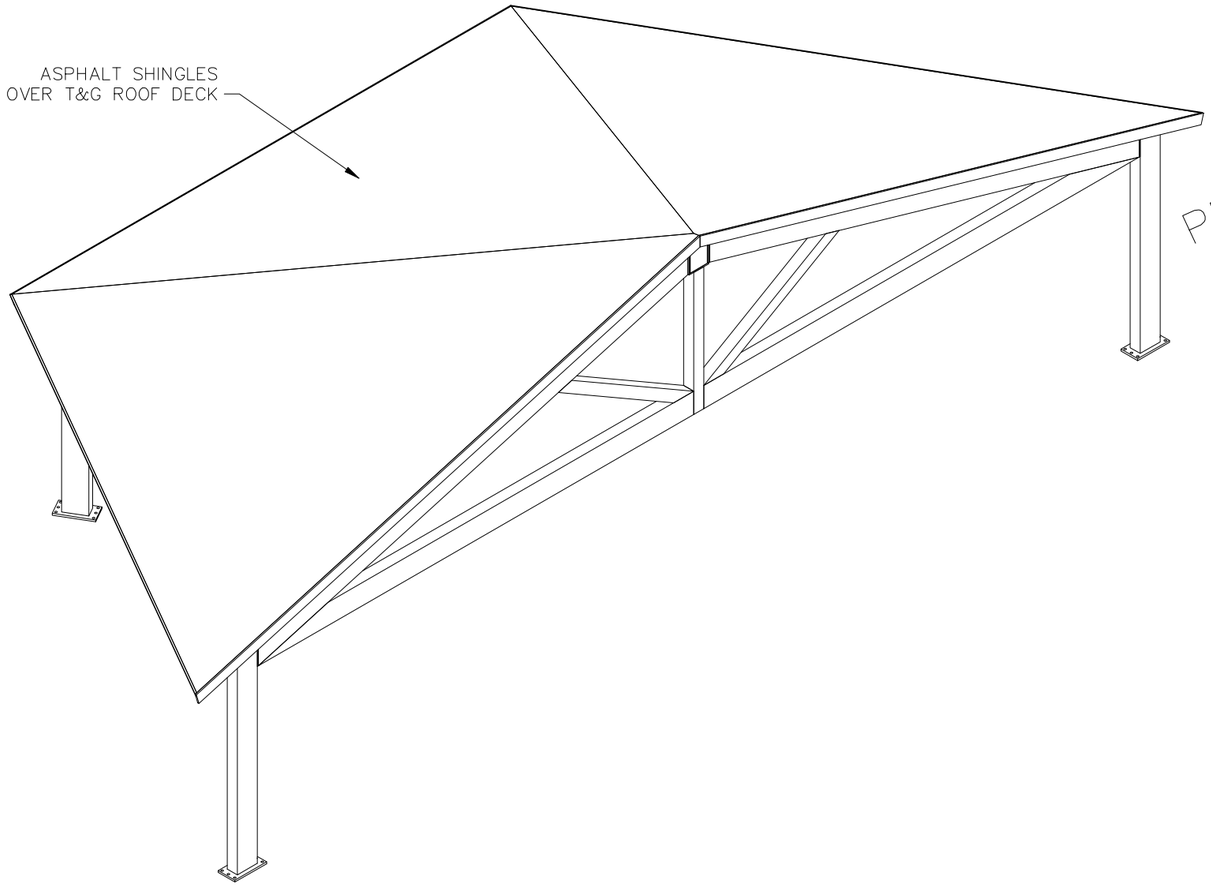
3.0 EXECUTION

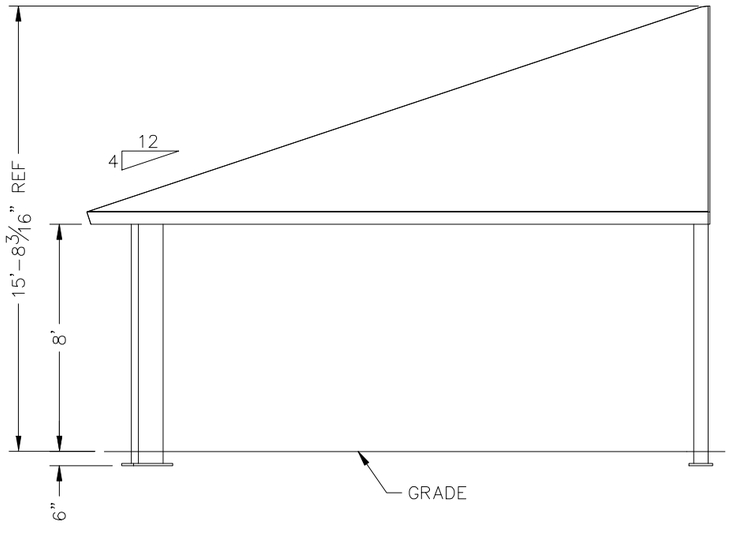
3.1 Installation

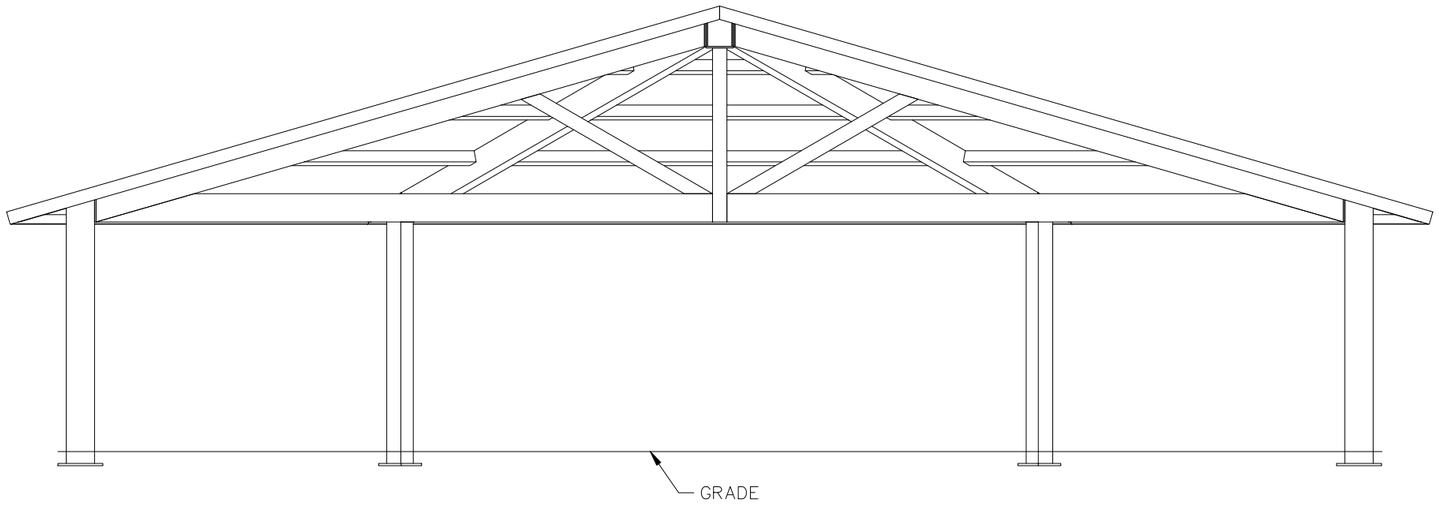
A. All site furniture shall be installed as per manufacturer's specifications and recommendations and shall follow all plans and details. Wherever the details and manufacture's specifications do not agree on footing size, the larger footing shall prevail. Wherever the details and manufacturer's specifications do not agree on any other item, the Owner shall be notified and a decision rendered.

B. Contractor shall be responsible for trimming all bolts and other similar fastener items to within one-quarter inch (1/4") of the nuts/fasteners. All fasteners shall be secured in a manner that will prevent removal: such as peening, tack welding, or tamper proof fasteners.

END OF SECTION







PRELIMINARY: NOT FOR CONSTRUCTION

ICON
Shelter Systems Inc
DISTINCTIVE STEEL SHELTERS
WWW.ICONSHELTERS.COM

1455 LINCOLN AVE.
HOLLAND MI, 49423

616.396.0919
800.748.0985
616.396.0944 FX

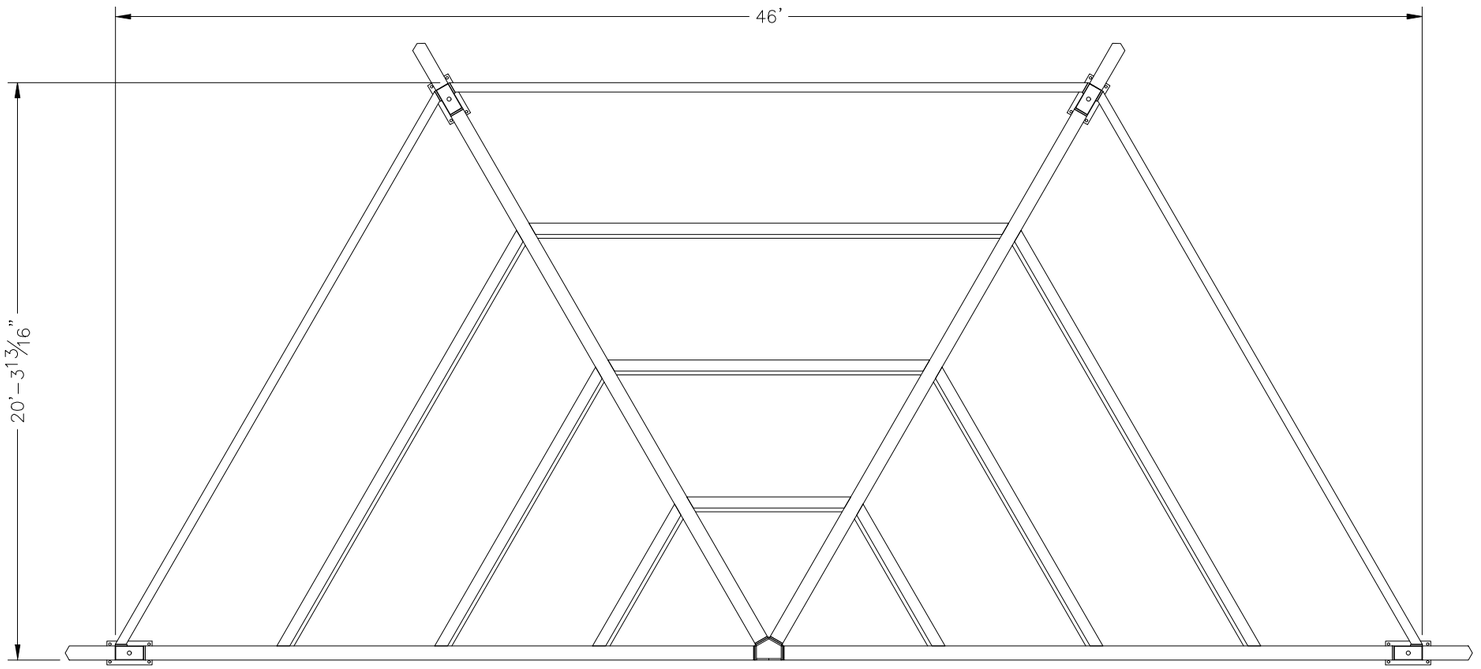
Elevation

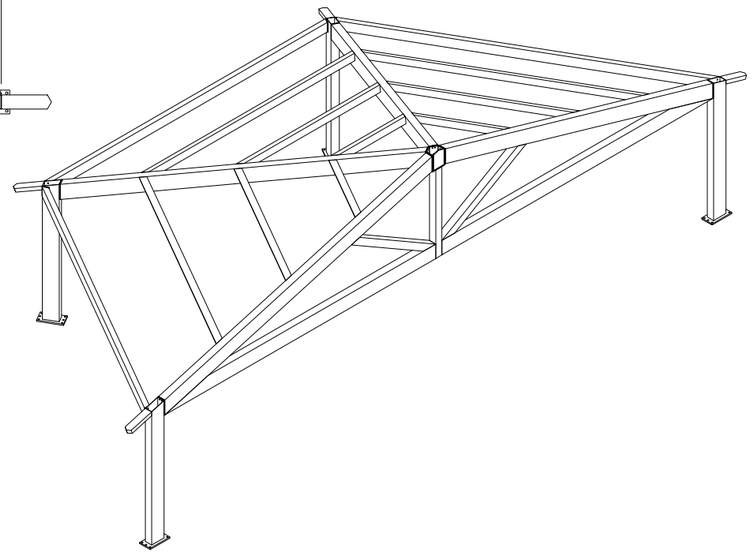
DRAWN BY:	ACP
DATE:	9/12/2022
PRELIMINARY ID:	76894
REVISION:	A
BUILDING TYPE:	BX50TA-P4
PROJECT NAME:	

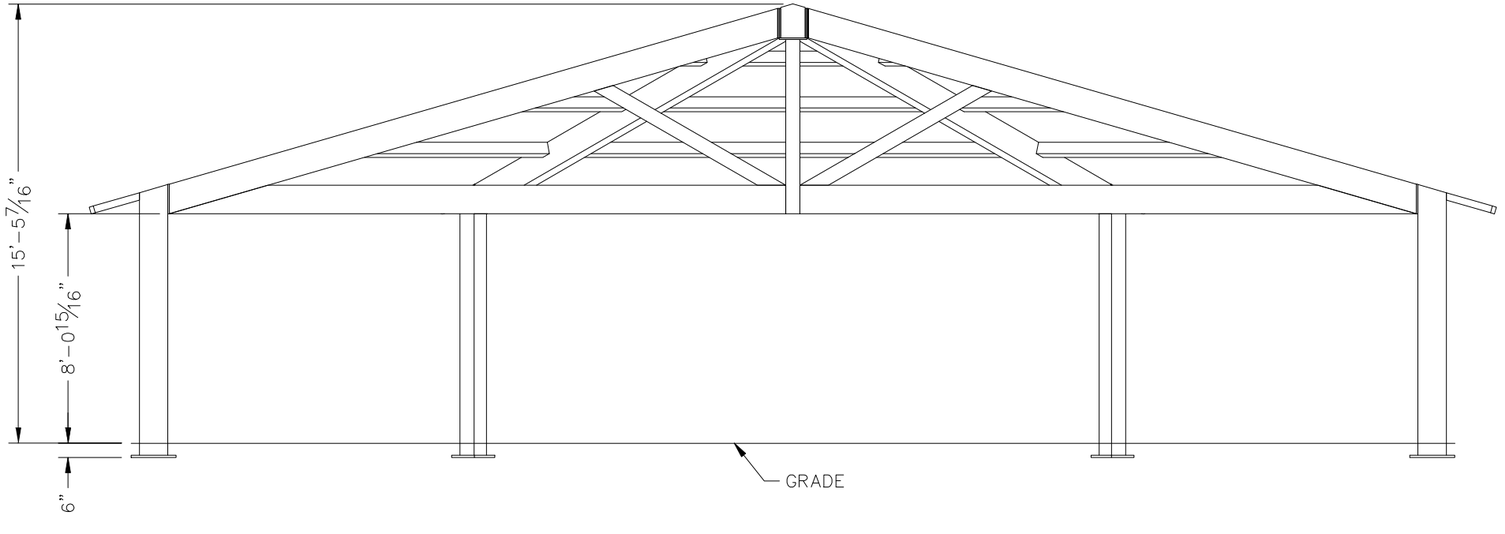
SHEET 1.0

Engineering\AcadStandard\Blocks\Titles\ICONPRETB QF-73-01-42

DWG: Shelters\BX\50\TA-P4-50-90-30\Drawings\Preliminary\BX50TA-P4-50-90-30~76894.dwg







ALL STRUCTURAL COMPONENTS WILL BE:
TUBE: ASTM A500 GRADE B
PLATE: ASTM A36
BOLTS: ASTM A325
NUTS: ASTM A563
WELDING: GMAW

NOTE:
COLUMN SIZE: HSS 14x6x5/16

PRELIMINARY: NOT FOR CONSTRUCTION

ICON
Shelter Systems Inc
DISTINCTIVE STEEL SHELTERS
WWW.ICONSHELTERS.COM

1455 LINCOLN AVE.
HOLLAND MI, 49423

616.396.0919
800.748.0985
616.396.0944 FX

Frame

DRAWN BY: ACP
DATE: 9/12/2022
PRELIMINARY ID: 76894
REVISION: A
BUILDING TYPE: BX50TA-P4
PROJECT NAME:

SHEET 3.0

DWG:Shelters\BX\50\TA-P4-50-90-30\Drawings\Preliminary\BX50TA-P4-50-90-30~76894.dwg

Engineering\AcadStandard\Blocks\Titles\ICONPRETB QF-73-01-42

ELECTRICAL INFORMATION - BANDSHELL HEXAGON

ICON'S STANDARD ELECTRICAL IS DESIGNED TO ACCOMMODATE Ø1/2" CONDUIT WITH A Ø3" INLET HOLE ON THE BOTTOM OF EACH COLUMN.
THE CONDUIT PATHWAY RUNS THROUGH THE COLUMN, RAFTER, AND RIDGE BEAM THROUGH ALL BOLTED CONNECTIONS AS SHOWN.
IF YOU HAVE SPECIAL ELECTRICAL REQUIREMENTS, PLEASE OUTLINE ANY CHANGES BELOW AS DESCRIBED.

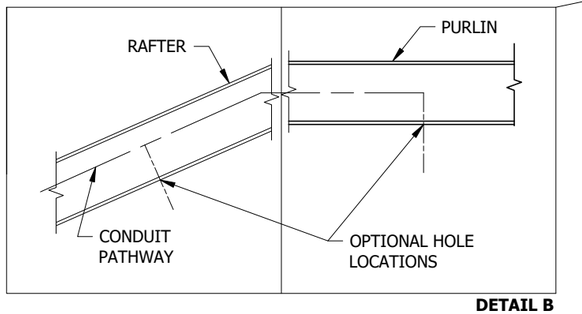
PLEASE NOTE: DESIGN LIMITATIONS ON HOLE/CUTOUT SIZES MAY APPLY.
ICON WILL REACH OUT TO DISCUSS ANY SUCH LIMITATIONS AS NEEDED.

NOTE: ICON SHELTER FRAME IS NOT UL LISTED TO ACT AS A CONDUIT FOR ELECTRICAL WIRING. CONSULT LOCAL BUILDING CODES WHEN PLANNING YOUR ELECTRICAL SYSTEM.

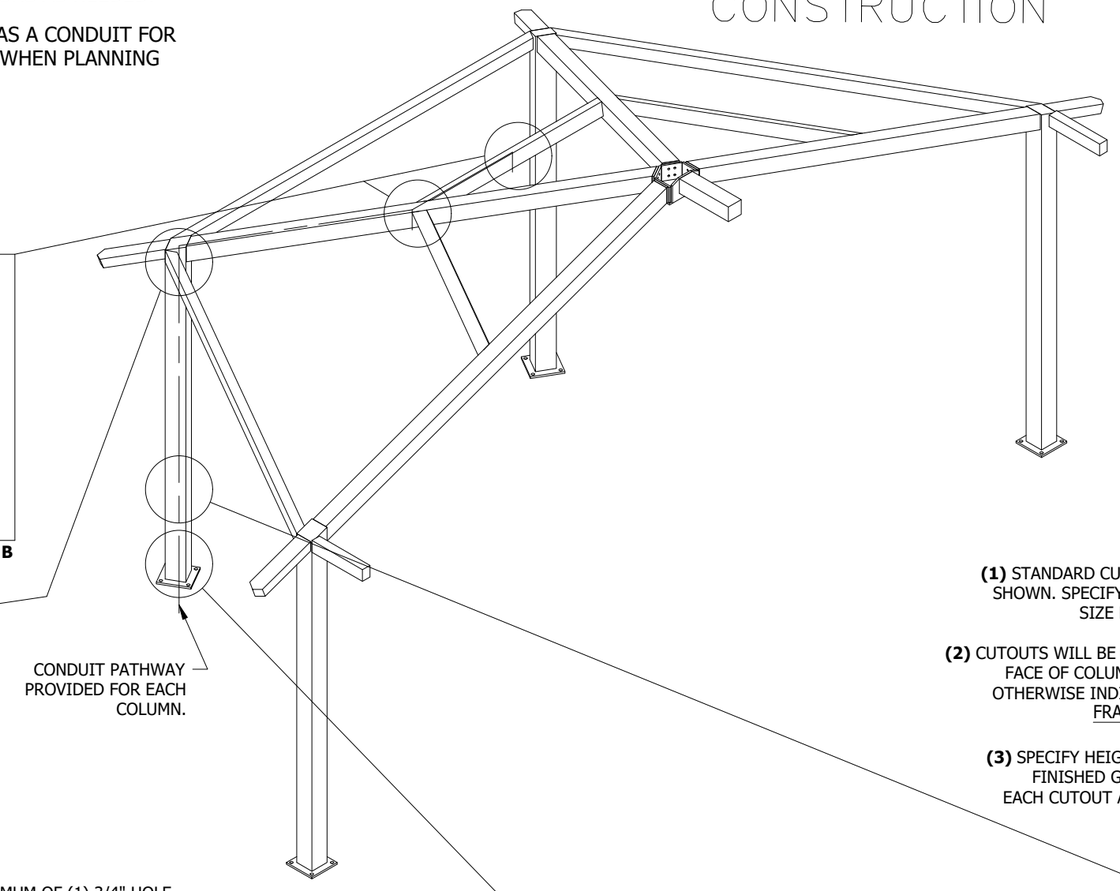
PRELIMINARY: NOT FOR CONSTRUCTION

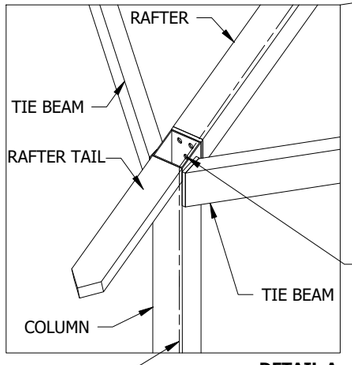
OPTIONAL EXIT HOLES

IF REQUIRED, EXIT HOLES FOR LIGHTING, ETC. CAN BE PLACED IN THE RAFTER, PURLIN, AND/OR COMPRESSION RING WITH 14ga COVER PLATE (CHARGES APPLY)
USE FRAME SHEET OF THIS PRELIMINARY TO SPECIFY REQUIRED EXIT HOLE LOCATIONS AND SIZE.



DETAIL B

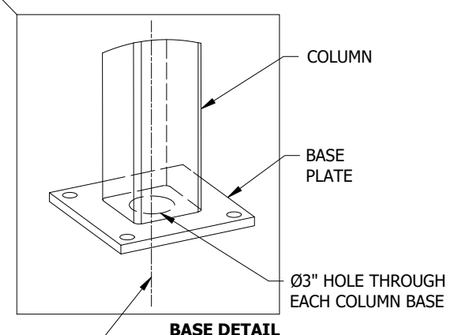




DETAIL A

ICON PROVIDES A MINIMUM OF (1) 3/4" HOLE AT
EACH CONNECTION FOR 1/2" CONDUIT.
IF APPLICABLE, PLEASE SPECIFY REQUIRED CONDUIT SIZE: (CHARGES APPLY)

- ☐ 3/4" CONDUIT (1" HOLES)
- ☐ 1" CONDUIT (1 1/4" HOLES)
- ☐ OTHER (PLEASE SPECIFY _____)



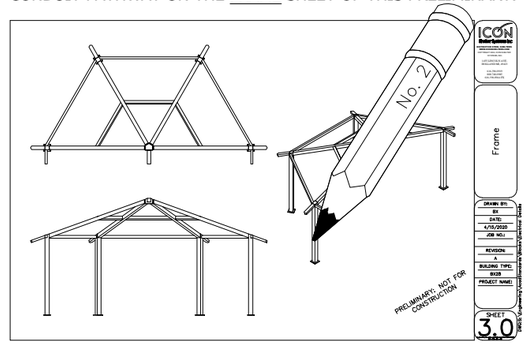
BASE DETAIL

NOTE: BUILDING DEPICTED ON THIS SHEET FOR ILLUSTRATION PURPOSES ONLY. ACTUAL LAYOUT AND FRAME MEMBER QUANTITIES VARY BY DESIGN. PLEASE REFER TO ELEVATION AND FRAME SHEETS IN THIS PRELIMINARY FOR ORDER-SPECIFIC CONFIGURATION.

STEPS:

1. CONDUIT HOLE SIZE (DETAIL A)
2. ELECTRICAL EXIT HOLES (DETAIL B)
3. ELECTRICAL ACCESS & COVER PLATES (DETAIL C)
4. ELECTRICAL CONDUIT PATHWAY (DETAIL D)

IF REQUIRED, PLEASE DRAW THE NECESSARY ELECTRICAL CONDUIT PATHWAY ON THE FRAME SHEET OF THIS PRELIMINARY.



DETAIL D

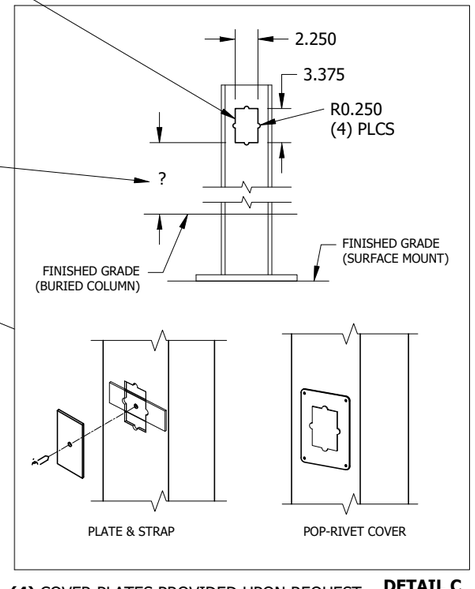
OPTIONAL CUTOUTS

USE FRAME SHEET OF THIS PRELIMINARY TO SPECIFY REQUIRED CUTOUT LOCATIONS (CHARGES APPLY)
SEE REQUIRED INFO BELOW

(1) STANDARD CUTOUT SIZE SHOWN. SPECIFY IF OTHER SIZE REQUIRED.

(2) CUTOUTS WILL BE ON INSIDE FACE OF COLUMN UNLESS OTHERWISE INDICATED ON FRAME SHEET.

(3) SPECIFY HEIGHT ABOVE FINISHED GRADE FOR EACH CUTOUT AS SHOWN



DETAIL C

(4) COVER PLATES PROVIDED UPON REQUEST (CHARGES APPLY)
PLEASE SPECIFY TYPE AND QUANTITY REQUIRED:

- ☐ PLATE & STRAP
- ☐ POP-RIVET COVER PLATE

HOW MANY REQUIRED?_____

ICON Shelter Systems Inc
DISTINCTIVE STEEL SHELTERS
WWW.ICONSHELTERS.COM

1455 LINCOLN AVE.
HOLLAND MI, 49423

616.396.0919
800.748.0985
616.396.0944 FX

Electrical

DRAWN BY:	ACP
DATE:	9/12/2022
PRELIMINARY ID:	76894
REVISION:	A
BUILDING TYPE:	BX50TA-P4
PROJECT NAME:	

SHEET 5.0

Engineering\AcadStandard\Blocks\Titles\ICONPRETB QF-73-01-42

DWG: Shelters\BX\50\TA-P4-50-90-30\Drawings\Preliminary\BX50TA-P4-50-90-30-76894.dwg

Play Design Scapes

352 Cedar Lane
Elk Grove Village IL 60007
224-324-4597
847-354-2697

Estimate

Date	Estimate #
10/18/2022	158046

Name / Address

Park District of Oak Park
Nelson Acevedo
218 Madison
Oak Park IL 60302

Customer Phone	

gina@playdesignscapes.com

224-324-4597	Quote is good for 30 days
Terms	Net 30

Project Name

Central Park

Item	Description	Qty		
Most Dependable	Most Dependable Fountains 10145SMFA	1		
Most Dependable	Most Dependable Fountains Pet Fountain	1		
Most Dependable	Most Dependable Fountains Recessed Hose Bibb with Lock Door	1		
Most Dependable	Most Dependable Fountains Carrier/Template	1		
Freight	Freight	1		
MDF Notes	Price does not include installation or assembly. Customer responsible for unloading and storage. Lead time is approximately four weeks ARO and deposit or payment if required.			
Discount	Discount to Customer			

Customer Signature:

Doty & Sons Concrete Products, Inc.

1275 East State Street
Sycamore, IL 60178

Phone: 800-233-3907
Fax: 815-895-8035

Quotation

Date	Quotation Number
5/2/2022	238988

Name / Address	Ship To
Customer Phone	Customer Fax

Project/Job	Terms	FOB	Rep	Ship Via
CENTRAL PARK - OAK BROOK		60523	M	MOTOR FREIGHT

Item	Description	Qty		
T6205	SQUARE SYCAMORE TABLE SET WITH 40" SQUARE TOP AND TWO SEATS.	2		
FINISH	STANDARD FINISHES AVAILABLE AT QUOTED PRICE: YOUR CHOICE OF SB1, SB6 OR SB7. SPECIAL FINISHES AVAILABLE AT AN ADDITIONAL COST.	2		
DIAM	DIAMOND GRIND TABLE TOP AND SEAT SURFACES	2		
T6060	CHECKERBOARD FOR TABLES. TOP SURFACE IS POLISHED . CHECKERBOARD PATTERN IS THEN PAINTED ONTO THE SURFACE OF THE TABLE. NO INDIVIDUAL TILES THAT CAN BE PRIED OUT BY VANDALS. STANDARD BOARD COLOR IS BLACK.	2		
ACR3	TWO COATS OF SEMI-GLOSS SEALER APPLIED	2		

Quoted by:	
Signature:	**Date:**

Doty & Sons Concrete Products, Inc.

1275 East State Street
Sycamore, IL 60178

Phone: 800-233-3907
Fax: 815-895-8035

Quotation

Date	Quotation Number
5/2/2022	238988

Name / Address	Ship To
Customer Phone	Customer Fax

Project/Job	Terms	FOB	Rep	Ship Via
CENTRAL PARK - OAK BROOK		60523	M	MOTOR FREIGHT

Item	Description	Qty		
T1086050	REGULATION SIZE CONCRETE PING PONG / TENNIS TABLE. SIZE 108" LONG X 60" WIDE X 30" HIGH WITH 6" THICK CURVED CONCRETE LEGS, 4" STEEL I-BEAM SUPPORTS CONSTRUCTION. WT. 3558 LBS. FEATURES: 1. TWO PIECE TABLE TOP 4" THICK 2. TABLE TOP IS POLISHED 3. SEALED WITH TWO COATS OF CONCRETE SEALER AND COVAL ANTI-GRAFFITI SEALER 4. BLACK STRIPED CENTER LINE 5. STAINLESS STEEL NET 1/4" THICK WITH GUSSETED END SUPPORTS 6. I-BEAM SUPPORTS POWDER COATED IN A TWO PART PROCESS. TOP COAT STANDARD BLACK. OTHER COLORS AVAILABLE - IF INTERESTED, PLEASE CALL FOR DETAILS	1		
SB7	SANDBLAST LIGHT GRAY LIMESTONE LEGS	1		
SB6LS	SANDBLAST NATURAL GRAY CONCRETE LIMESTONE MIX	1		
NET	YOUR CHOICE OF NET STYLE ONE OR STYLE TWO	1		

Quoted by:	
Signature:	**Date:**

Doty & Sons Concrete Products, Inc.

1275 East State Street
Sycamore, IL 60178

Phone: 800-233-3907
Fax: 815-895-8035

Quotation

Date	Quotation Number
5/2/2022	238988

Name / Address	Ship To
Customer Phone	Customer Fax

Project/Job	Terms	FOB	Rep	Ship Via
CENTRAL PARK - OAK BROOK		60523	M	MOTOR FREIGHT

Item	Description	Qty		
SH3	PACKING AND SHIPPING BY FLATBED TRUCK. YOUR PERSONNEL TO UNLOAD - SEE COMPLETE DESCRIPTION BELOW.	1		
SH3D	SH3 DESCRIPTION - ALL SHIPPING CHARGES SHOWN ABOVE. SHIPPED BY FLATBED SEMI TRAILER ON PALLETS TO ONE BUSINESS ADDRESS ONLY. CUSTOMER PERSONNEL TO MEET DRIVER (DURING REGULAR BUSINESS HOURS) AND PROMPTLY REMOVE PALLETS FROM TRUCK. A 5000 LB. OR LARGER FORK TRUCK WITH 48" FORKS FOR UNLOADING MUST BE ON SITE AT TIME OF ARRIVAL. CUSTOMER TO UNPACK ITEMS AND SET AT SPECIFIC SITES. DELIVERY FEES ARE BASED ON FUEL PRICES TODAY. BECAUSE OF UNCERTAIN FUEL COSTS IN THE FUTURE, WE RESERVE THE RIGHT TO ADD OR SUBTRACT ANY CHANGE IN FUEL COSTS IN EFFECT THE DAY OF DELIVERY. TAX EXEMPT ORGANIZATIONS			

IF YOU WISH TO PLACE AN ORDER, PLEASE SIGN AND DATE WHERE INDICATED AND RETURN BY FAX. THANK YOU FOR THE OPPORTUNITY TO SUBMIT THE ABOVE QUOTATION. THE INDICATED PRICE IS VALID FOR 30 DAYS.
NOTE: ANY CHANGE IN ITEM OR QUANTITY WILL REQUIRE A REBID.

Quoted by:	
Signature:	**Date:**

SECTION 31 2000
EARTHWORK

1.0 GENERAL

1.1 Description

A. The work consists of all work as called for by plans and/or proposal form and may include the following: rough and finish grading to approved grade stakes; excavation of organic or unstable soils; excavation of debris and rocks; excavation, stockpiling and redistribution of topsoil; placement of sand or gravel base; placing and grading supplemental topsoil; and all other grading and excavation operations. Unless otherwise called for in the plans and specifications, work shall conform to all applicable Soil Erosion and Sedimentation Control Regulations as enacted in the County, City/Village, Soil and Water Conservation District, etc. having jurisdiction over the project location.

1.2 Submittals

A. Contractor shall submit samples and information to the Owner's Representative on the location of the source for any proposed materials to be brought on site. Source shall be subject to approval before use.

2.0 PRODUCTS

2.1 Fill Materials

A. Fill and backfill materials shall be clean, porous, granular materials free of clay, rock or gravel larger than two inches (2") in any dimension, debris, frozen material, vegetation or other deleterious matter. Contractor shall be permitted to use material excavated as part of this project as backfill material provided that excavated material meets all other requirements herein and is free of trash and other debris. Sod shall not be used for fill.

B. Fill material must be approved by the Owner's Representative before being placed. When suitable materials are not available from the excavation they shall be provided by the Contractor from off-site sources.

2.2 Topsoil

A. Topsoil is defined as follows: all topsoil shall be fertile, friable natural topsoil, typical for this locality. It shall not contain a mixture of subsoil or slag and shall be free of lumps, stones, plants or roots, stalks or other extraneous matter and shall not be used while in a frozen or muddy condition. Topsoil shall have an acidity range of pH 5.5 to pH 7.5 and shall contain not less than five percent nor more than twenty percent organic matter as determined by loss on ignition of moisture free sample dried at 100 degrees centigrade. Topsoil shall be classifiable as loam, silt loam, silty clay loam, or sandy clay loam, as determined from the Natural Resources Conservation Service - USDA triangular soil texture chart. Topsoil shall be used in the upper six inches (6") of all seeded areas.

2.3 Base Material

A. Base materials shall conform to specified detail and shall be properly graded mixture of natural or crushed gravel, crushed stone, or natural processed sand that will readily compact to the required density and remain in that condition.

3.0 EXECUTION

3.1 Layout

A. The corners of the designated areas, including separate paving, surfacing, and lawn, shall be determined by careful survey according to plans and details. Stakes shall be set indicating the exact position of these corners and the final elevation of the indicated area.

B. Before any excavation or filling operation begins, approval of the location and the proposed elevation must be obtained from the Owner's Representative. If existing conditions are at variance with the drawings, the Owner's Representative shall be notified before proceeding with the work and adjustments made only as directed.

C. Back-filling shall be done only after the Owner's Representative has inspected and approved sub-grade. Notice that the work is ready for inspection shall be given promptly, and 48 hours minimum shall be allowed for making necessary examinations. Failure to comply may require excavation to previous grade and the performance of back-filling operations again at no additional cost to the Owner.

3.2 Stripping Topsoil

A. Prior to the stripping of topsoil, all areas within the grading limits containing existing debris shall be cleaned sufficiently to permit easy use of the topsoil free of unmanageable debris. Topsoil in areas that are to be graded shall be stripped to the depth designated and stockpiled in an area approved by the Owner's Representative. This is the first supply of topsoil to be used for spreading over disturbed or graded areas. The site shall be excavated to provide a sub-grade which shall be shaped to true and even lines so as to assure a uniform thickness of the base course or other surfacing installation. Excess material and debris generated from this work shall be hauled from the site at the Contractor's expense.

3.3 Unsatisfactory Materials

A. Unsuitable materials or unstable bearing soil for structures and pavements shall be excavated to stable soil and replaced with an approved sand, gravel or soil and compacted as specified.

3.4 Excavation for Structures

A. Excavation for all structures, paving, and site improvements shall be to the tolerances specified and shall extend sufficient distances from footing and foundations to permit placing and removal of forms, installation of services, and other construction operations and inspections.

3.5 Dewatering

A. Site is to be maintained in dry condition in excavations and areas to be filled. Fill, topsoil, or sub-base shall not be placed in water or excessively damp conditions. It is the Contractor's responsibility to remove water and maintain dry conditions.

3.6 Placing Fill

A. During grading and filling operations, all fill shall be placed in five inches (5"), or less layers and compacted by operating heavy track, or rubber tired equipment over it or with compaction equipment. Fill and backfill shall be so

placed as to cause minimum disturbance to underlying soils. Material shall have the correct moisture content. Wet soil shall be disked or otherwise scarified to allow each layer to dry.

B. Holes, pits and removed footings shall be filled and compacted to within six inches (6") of the surrounding grade with approved clean fill and then topped with six inches (6") compacted topsoil. Filling holes shall be considered incidental to the Contract.

3.7 Compaction

A. Fill and sub-base material shall be compacted to not less than the 95% ASTM D1557 or Proctor Density. Compaction of topsoil in lawn areas shall be 85% of proctor density.

3.8 Grade Tolerance

A. All earthwork shall be within one-half inch (1/2" or 0.042') of the elevations called for on the plans. All pavement grading shall be within one quarter inch (1/4" or 0.021') of the elevations called for in the plans. All grading shall drain uniformly to designated low points and all changes in elevation and transition areas shall be with gentle, rounded gradients. The grade tolerance allowed shall not create a situation where a walk or area becomes inaccessible per the Americans with Disabilities Act. If this occurs the work shall be removed at the cost of the Contractor and reinstalled to meet current ADA standards.

END OF SECTION

SECTION 32 1313
CONCRETE PAVING - Fiber

1.0 GENERAL

1.1 Description

A. This work shall consist of all labor, equipment and materials necessary for complete installation of concrete work: slabs, paving, curbs, walls, footings, and concrete work as called for in the plans and details.

B. All work, which is without a specification herein, shall be performed in accordance with the Standard Specifications for Road and Bridge Construction, latest edition adopted by the Illinois Department of Transportation.

1.2 Submittals

A. Mix Design: Submit proposed mix design for approval.

B. One copy of the delivery ticket shall be furnished to the Owner's Representative at the time the truck arrives at the job site.

2.0 MATERIALS

2.1 Crushed Aggregate Base

A. CA-6 crushed aggregate, Type B, shall be placed, to a compacted depth as indicated on plans, as a base course. The aggregate shall be thoroughly dry, unyielding and free of screening and dirt before proceeding with priming and paving, in accordance with material and placement standards of IDOT State Specifications.

2.2 Concrete Materials

A. The concrete shall be constructed of Portland Cement Concrete Type A, which shall have a minimum of six (6) bags of type one cement per cubic yard. Concrete shall meet ASTM C94.

B. The coarse aggregate used shall contain a maximum of 2%, by volume, deleterious material (commonly called chert free aggregate) and the maximum size of the stone shall be three-quarter inch (3/4").

C. Air content shall be not less than 5%, or more than 8%, and the slump shall not exceed four inches (4"). Fourteen (14) day compressive strength tests resulting in less than 3500 p.s.i. shall be cause for removal and replacement at Contractor's cost. Portland Cement shall conform to the requirements of the current ASTM Specifications for Air-Entraining Portland Cement.

2.3 Metal Reinforcing

A. Metal shall be fabricated conforming to the most current standard of ASTM A616, Deformed Billet-Steel Bars for Concrete Reinforcement of the grades indicated on the drawings. Welded wire mesh or fabric shall conform to Specifications for Welded Steel Wire Fabric for Concrete Reinforcement ASTM 185-current year.

2.4 Fiber Reinforcing

A. Fiber reinforcing material to be SINTA F19 or approved equal, manufactured from 100% virgin polypropylene in a microfilament form and contain over 50 million individual fibers for each 1.0 lb/yd3 dosed. Product shall be engineered specifically for use in concrete, alkali resistant, non-absorptive and completely non-corrosive. Product shall comply with ASTM Designation C 1116 Standard

Specification for Fiber-Reinforced Concrete and Shotcrete, Type III Synthetic Fiber-Reinforced Concrete or Shotcrete.

B. Fibers shall be 20 mm (3⁄4 in.) multifilament polypropylene fibers as supplied by GCP Applied Technologies, Cambridge, MA 02140, or approved equal. Required dosage rate shall be as specified by the design engineer or architect. Product shall be used in strict accordance with the supplier's recommendations and within time as specified in ASTM C94. The fibers shall comply with ASTM Designation C1116 Type III 4.1.3 and with applicable building codes. Certification of compliance shall be made available on request. Standard ACI 302 procedures for placing, finishing and curing shall be followed when using SINTA F19

2.5 Additives

A. Additives that have not been aforementioned within this specification shall not be used in any concrete without written approval from the Owner or Owner's Representative.

2.6 Forms

A. Forms shall be of lumber with a minimum two-inch (2") nominal thickness and six-inch (6") nominal width or steel with equal rigidity. They shall be held securely in place by stakes, braces, or other means and shall not allow concrete leakage. Forms for curves shall be flexible or shall be curved forms conforming to radius of curves shown on drawings. The use of straight sections will not be permitted for curves. Forms shall be clean and those for surfaces to be exposed shall produce a smooth, even finish without fins or board marks.

2.7 Expansion Joint Material

A. Expansion joint material shall meet the Illinois Department of Transportation Standard for Road and Bridge Construction, latest edition, Section 1051.00 Preformed Expansion Joint Fillers. Approved filler shall be as described in Section 1051.03 Bituminous Preformed Joint Filler and 1051.04 Preformed Fiber Joint Filler and 1051.05 Bituminous Preformed Inorganic Fiber Joint Filler and 1051.08 Preformed Closed Cell Plastic Joint Filler. All applicable sections shall apply for the above approved items.

3.0 EXECUTION

3.1 Concrete Mixing

A. Concrete shall be mixed only as required for immediate use and any which has developed initial set shall not be used. Concrete, which has partially hardened, shall not be re-tempered or re-mixed. The use of a fractional sack of cement will not be permitted unless the fractional part is measured by weight. The mixer shall be cleaned thoroughly each time when out of operation for more than thirty minutes.

B. Concrete mixes will be measured as described in the current Method Test for Consistency of Portland Cement Concrete of the ASTM Designation C-143. The concrete shall at times be of such consistency and workability, that it will puddle readily into corners and angles of the forms and around joint, dowels, tie bars and reinforcement without excessive spading, segregation or undue accumulation of water.

C. The mixing of concrete in truck mixers in route from the batching plant to the site will not be allowed without prior approval. Mixing shall take place at the batching plant. The mixing shall be done on a level area, sloping not more than two percent in any direction.
D. The concrete shall be discharged within a period of one hour after the introduction of the mixing water with the dry materials or within a period of 1-1/2 hours after the cement has been placed in contact with the aggregates. It shall be within the specified limits for consistency and air content and it shall not be segregated.

3.2 Sub-grade

A. Sub-grade or base shall be accurately graded and compacted as specified in Section 31 2000, EARTHWORK. The sub-grade or base shall be moistened just before the concrete is placed.

3.3 Forms

A. The forms shall be set so that concrete slabs will have a slope of not less than one-quarter inch (1/4") per foot. Forms shall be held in line and grade by stake or braces at intervals to produce layout as specified in plans. Straight lines shall change to curve where line is tangent to curve. Forms shall be constructed in a manner that will permit their removal from exposed areas without damage to fresh concrete. Forms shall be of the full depth of the structure. Provide uniform bearing for all forms. The inside surface of the forms shall be oiled with a light, clear paraffin-base oil which will not discolor or otherwise injuriously affect the concrete as on walls or other exposed surfaces. All forming shall be approved by Owner or Owner's Representative before pouring concrete.

3.4 Reinforcement

A. All steel reinforcement shall be accurately placed in position shown on plans and firmly held during the placing of concrete. When placed in the work, steel shall be free from dirt, rust, mill scale, paint, oil or other foreign material. Bars shall be placed with a variation in spacing between adjacent bars of not more than one-sixth of the spacing shown on the plans, and the clear distance from the near surface of the concrete and the reinforcement shall not vary from the distance shown on the plans by more than one-fourth the plan distance. Bars shall be tied at all intersections except where the spacing is less than one foot in each direction in which case every other intersection shall be tied. Supports for reinforcement which are to remain in the work shall be either precast concrete blocks of approved shape and dimensions or approved preformed steel bar-chairs.
B. Bars shall not be spliced except as provided on the plans or as authorized by the Owner or Owner's Representative.
C. SINTA™ F19 fiber may be added to concrete at any point during the batching or mixing process. SINTA™ F19 may be added to the aggregate during weighing or charging, or to the central mixer or truck before, during, or after charging. The load must be mixed at high speed for 5 minutes, or 70 revolutions, after the addition of the SINTA™ F19 to ensure uniform distribution. The standard range of addition for SINTA™ F19 is ¾ to 3 lbs/yd (450 to 1800 g/m) of concrete. Typically, 1½ lbs/yd (900 g/m) of SINTA™

F19 provides excellent results. Higher addition rates may be used to produce concrete when special properties are required.

3.5 Placing Concrete

A. Placing concrete shall not be permitted until the sub-grade and forms have been approved by the Owner or Owner's Representative. The concrete shall be placed in one pour for the full depth of stated structure unless otherwise approved by the Owner or Owner's Representative. The concrete shall be placed in successive batches for the entire width of structure. It shall be struck off from 1/2" to 3/4" higher than the finished grade, tamped until all voids are removed and free mortar appears on the surface. Finally, it shall be thoroughly spaded along the edges, struck off to the proper grade, and finished to a plane, even surface with floats and trowels. The final troweling shall be done with steel trowel, leaving a smooth even surface.

3.6 Finishing

A. After the water sheen has disappeared, the surface shall be given a final finish by brushing with a whitewash brush. The brush shall be drawn across the sidewalk or structure at right angles to the edges of the walk or structure, with adjacent strokes slightly overlapping, producing a uniform, slightly roughened surface with parallel brush marks. Brush marks should be of a depth to produce a light broom finish.

B. Edges on all concrete shall be rounded to a radius of one-quarter inch (1/4") with a finishing tool unless otherwise specified. All joints shall be rounded with a double edging tool having a radius of one-quarter inch (1/4") on each side and the surface shall then be brushed lightly to produce a slightly roughened surface and remove the finishing tool marks.

C. The surface shall be divided by grooves called contraction joints constructed at right angles to the centerline of the sidewalk or structure. These joints shall extend to one-quarter inch (1/4") the depth of the sidewalk, shall be not less than one-eighth inch (1/8") and no more than one-quarter inch (1/4") in width, and shall be edged with a jointing or edging tool having one-quarter inch (1/4") radius. The joints shall be five feet (5’) apart on sidewalks and ten feet apart on curbs unless otherwise specified.

D. Expansion joints shall be placed between all separate pours, all structures and at thirty foot intervals on both sidewalks and curbs.

3.7 Sandblast Finish

A. Specified sandblast surfaces to be finished with silica sand suitable for intended purpose at least twelve (12) days after the concrete has been poured. Sandblast depth per plans, exposing the aggregate but not so deep as to drive the aggregate out of the wall or create voids in the surface. Create uniform pattern and exposure while avoiding over-blasting. Seal all surfaces with two (2) coats approved clear sealer after concrete has fully cured and dried.

B. Sandblast sample shall be created by the Contractor for approval by Owner’s Representative before work commences.

3.8 Protection

A. Protection of Concrete shall be performed in following manner:

1. Protection Against Vandalism: The Contractor shall take all necessary precautions to ensure the protection of work against vandalism or graffiti. Any work, which is blemished in the finish, will be cause for rejection of flat work or curbing.
2. Protection Against Rain: The Contractor shall take such precautions as are necessary to protect the concrete from damage.
3. Hot Weather Limitations - Casting of concrete during hot weather shall be limited by the temperature at the time of placing. Concrete shall not be cast when the temperature is above 90° F. Care shall be taken to properly wet and protect all concrete placed indirect sun or in hot weather.
4. Cold Weather Limitations - No concrete shall be placed unless the temperature of the air in the shade and away from artificial heat is at least 32° F and rising unless specifically approved. All concrete poured at less than 40° F, or at a time when within 24 hours of pouring concrete the temperature shall dip below 40° F shall be insulated. The Contractor shall be responsible for the concrete placed during cold weather and any concrete injured by frost action shall be removed and replaced at Contractors expense.

3.9 Curing

A. Forms shall be left in place for a period of not less than 12 hours. Immediately after they have been removed, all porous or honeycomb areas thus uncovered shall be filled smooth with mortar consisting of one part cement and two parts fine aggregate. Also, the ends of all expansion joints shall be cut open to the full width of the expansion joint material.
B. Placing concrete, once started, shall be a continuous operation. No portion of a walk, curb or paved area shall be partially poured except as shown for installation of joints.

3.10 Footings

A. Concrete footings shall be sloped at the top to ensure drainage away from the embedded item (post or otherwise). All footings shall be constructed as indicated on the detail drawings. All footings unspecified on drawings shall be according to the manufacturer's specifications of the product to be footed, but depth of all footings shall be a minimum of 42” below finished grade.

END OF SECTION

SECTION 32 1817
SAFETY SURFACES: POURED-IN-PLACE

1.0 GENERAL

1.1 Description

Safety surfacing consists of providing all material and labor necessary for complete installation of safety surfacing in playground areas. This shall include rubber poured-in-place (PIP) surfacing and rubber tile surfacing.

All materials and installation shall conform to ASTM F1292 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment and ASTM F2223-19 Standard Guide for ASTM Standards on Playground Surfacing. All materials shall have been tested according to the ASTM F1292 specifications and shall meet or exceed all requirements for height of equipment installed or height of existing equipment that is specified to remain.

All materials shall meet ASTM F 1951 Standard Specification for Determination of Accessibility for Surface Systems Under and Around Playground Equipment. All materials shall have been tested according to the ASTM F1951 specifications and shall meet or exceed all requirements.

1.2 Submittals

A. sample of each color/color blend of the playground surface shall be submitted to the Owner's Representative for approval. These items shall be approved prior to ordering or delivery to the site.

B. Prior to installation, the following test reports shall be submitted to the owner. The dates of independent laboratory test results shall be within the five years previous to the award-of-contract date.

1. Freeze Thaw: ASTM C67
2. Manufacturers current IPEMA Certification
3. Slip Resistance: ASTM D2047 and E303.
   Dry – 1.0-.8,
   Wet - .9-.6
4. Tensile Strength: ASTM D412; 60-80 psi
5. Elongation at Breakage: ASTM D412
6. Trear Strength: ASTM D624; 140%
7. Wear surface density (durability)
8. Taber Abrasion: ASTM C501
9. Flammability: ASTM D2859

C. Following installation: Submit certified test reports from qualified independent testing agency indicating results of the following tests for the poured in place rubber surfacing system:

1. Impact Attenuation: ASTM F 1292.
   a. G-max score.
   b. Head injury criteria (HIC) score.

D. Submit Manufacturer's Project References:

1. Submit list of 10 successfully completed projects within the last 5 years. Project name and location, contact and phone number, and type and quantity of poured-in-place playground safety surfacing furnished must be included.

E. Submit Installer's Project References:
   1. Submit a list of ten (10) successful projects completed within the last five (5) years. Submittal shall include the name and location of each project, the name and number for a contact person and the type and quantity of PIP installed.
F. Submit manufacturer's maintenance and cleaning instructions.
G. Submit all warranty information:
   1.Submit manufacturer's warranty to comply with this specification.
   2. Submit installers warranty to comply with this specification.
H. **Submit installation depth plan**. Manufacturer submittal shall clearly indicate PIP (poured in place) thickness. The submittal shall also indicate where a change in thickness is located when it is in relation to play equipment and fall zones. The rubber thickness shall meet the required HIC (150) and G Max (850) as indicated in this specification and per ASTM standards – whichever is more stringent.
I. Submit results of Post-Installation Safety Inspection as described herein.

1.3 QUALITY ASSURANCE
A. Manufacturer's Qualifications:
   1. Continuously engaged in manufacturing of playground poured-in-place playground safety surfacing of similar type to that specified, with a minimum of 10 years successful experience.
   2. Furnished a minimum of 1,000,000 square feet of poured-in-place playground safety surfacing of similar type to that specified.
B. Installer's Qualifications:
   1. List of at least 20 projects within the last five (5) years, totaling a minimum of fifty thousand (50,000) square feet of PIP similar to the type of surface specified herein.
   2. A letter of Certification that the installer is approved by the PIP manufacturer to install the specified PIP system.
   3. Documentation proving that the installers employ workers fully trained in the installation of the specified PIP system.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
B. Storage:
   1. Store materials in accordance with manufacturer's instructions.
   2. Store materials in a dry area at a minimum temperature of 50 degrees F (10 degrees C) for a minimum of 72 hours before installation.
C. Handling: Protect materials during handling and installation to prevent damage or contamination.

1.7 ENVIRONMENTAL REQUIREMENTS
A. Poured-in-Place Surfacing:
   1. Material Temperature: Ensure material temperature is a minimum of 50 degrees F (10 degrees C) at time of installation.
   2. Air Temperature: Ensure air temperature is a minimum of 40 degrees F (4 degrees C) for a minimum of 24 hours before, during, and a minimum of 72 hours after installation. Follow manufacturer recommendations if warmer

temperatures or longer time period of temperature is required. The manufacture shall document this in writing.

1.8 WARRANTY

A. Playground Safety Surfacing System:

1. Poured-in-Place Surfacing:

a. Materials and Workmanship: Poured-in-place playground safety surfacing shall be warranted for defects in materials and workmanship for 5 years from date of completed installation.

b. Performance: Poured-in-place playground safety surfacing shall be warranted to meet impact attenuation performance requirements of ASTM F1292 for 5 years from date of completed installation.

c. A written warranty shall be provided to the owner that lists the company responsible for honoring the warranty as well as contact information.

d. The warranty shall be for 100% of both materials and labor including removals and testing. **A prorated warranty will not meet this specification.**

2.0 MATERIALS

2.1 Poured-in-Place Rubber Surfacing PRE-APPROVED MANUFACTURERS.

Surface America, P.O. Box 157, Williamsville, NY 14231, 716.632.8324, www.surfaceamerica.com as represented by NuToys Leisure Products, 800.526.6197.

GT Impax by Gametime, 150 Playcore Drive SE, Fort Payne, AL 39567 800.235.2440 as represented by Cunningham Recreation, 2135 City Gate Lane, Suite 300, Naperville, IL 60563 www.cunninghamrec.com 800.438.2780.

Pro-Tech Surfacing, LLC P.O. Box 301 Sharon Center, OH 44274, 330.576.6058; as represented by Parkreation, 27 East Palatine Road, Prospect Heights, IL 60070, 800.677.6608.

2.2 POURED-IN-PLACE SURFACING

A. Poured-in-Place Surfacing:

1. Description: Dual-density, resilient, seamless, poured-in-place, playground safety surfacing.
2. Compliance: Meet or exceed CPSC guidelines for impact attenuation.
3. Material: SBR and EPDM rubber shreds and granules mixed with 100 percent solids, MDI polyurethane binding agent.
4. Base Course: Mixture of SBR shredded rubber and MDI polyurethane agent that is: Weather resistant, UV stabilized, flexible, nonhardening, 100 percent solids polyurethane complying with requirements of authorities having jurisdiction for nontoxic and low VOC content.
   a. Binder-to-Rubber Ratio: 14 percent. +/- 2% and within minimum requirements.
   b. Compacted Density: 28 pcf. +/- 2% and within minimum requirements.
   c. Thickness: Sufficient to meet impact attenuation requirements of less than 150 gmax and less than 850 HIC

5. Wear Course: Mixture of EPDM or TPV rubber granules and **Aliphatic** binding agent.
    a. Binder-to-Rubber Ratio: 18-25 percent.
    b. Compacted Density: 50-60 pcf.
    c. Thickness: 3/8 – 5/8 inch.
6. Total Thickness: As necessary to meet the impact attenuation requirements for each given Critical Fall Height as shown on drawings. In all cases the Gmax shall be less than 150 and the HIC shall be less than 850.
7. Colors: As indicated on the drawings
    a. Granules on wear layer shall have full color through cross section, except where plans indicate a blending or color transition.

B. Test Results (In field – post installation): Testing shall be conducted in accordance with ASTM 1292-18e1
1. Impact Attenuation scores shall be:
    a. Gmax Score: Less than 150.
    b. Head Injury Criteria (HIC) Score: Less than 850.

2.3 Filter Fabric

Filter fabric shall be Typar Filter Fabric by Dupont or Geo-Textile fabric by Geo-Synthetics or approved equal.

3.0 EXECUTION

3.1 Subgrade

Surfacing shall be built on a prepared sub-grade as per appropriate detail. All stones, rocks, pieces of concrete, roots or any other debris shall be removed. The prepared sub-grade shall be clear, level and compacted. Any stumps or roots shall be removed to eighteen inches (18”) below finished grade.

3.2 Filter Fabric

Filter fabric shall cover 100% of sub-grade. At filter fabric seams, a six-inch (6”) overlap with pinning shall be installed.

3.3 Poured-in Place Rubber Surfacing Installation

1. Prepare subsurface in accordance with manufacturer's instructions to ensure proper support and drainage for poured-in-place playground safety surfacing.
2. Compacted, granular aggregate subsurface shall be as indicated in the drawings and per manufacturer’s recommendations.
3. Variations in Elevation: Repair variations in elevation of completed subsurface greater than plus or minus 1/4 inch over 10 feet in any direction.
4. Sub-base of granular material shall be installed as per appropriate specification and detail.
5. Ensure prepared subsurface is dry and clean.
6. Install edges in accordance with manufacturer's instructions and as indicated on the Drawings.
7. Where color pattern is indicated, install cold seams between adjacent colored material. See Drawings.
8. Spread surface course evenly over primed base course to form a level layer of uniform density and consistency, applied at manufacturer’s standard spreading rate in one continuous operation, and, except where color changes, with no cold seams. Seams or breaks in uniformly colored surfacing fields will not be

accepted. Should a seam occur due to a uniformly colored surface area not being installed in a continuous operation, Contractor will be responsible for removing and reinstalling surface area at no cost to the Owner.

9. Surfacing shall be installed in two layers on two separate days allowing appropriate cure time between installation of rubber base and cap. All rubber and binder shall be mixed on-site just before use. Surface shall be screed with metal scree rods and troweled to meet desired depth. Surface shall be even and smooth with no deflection to create low or high spots. Surface edges shall be flush with edge of concrete walk and curb where surfaces meet. Surface must maintain a high level of porosity after installation. Installation shall be as per manufacturer's direction.

3.6 FIELD QUALITY CONTROL

A. In Field Post-Installation Safety Inspection:

1. Provide inspection and testing of playground safety surfacing system within 30 days of installation. Contractor shall give the Owner/Owner's Rep 48 hours prior notice.
2. Owner/Owner's Representative shall be on-site during play surface testing.
3. Test shall be three "drops" per 1,000 s.f. minimum. More test drops shall be required to include drops on varying surface depths on poured in place material where the 3 per 1,000sf does not include these site conditions.
4. Determine compliance with ASTM F1292 unless otherwise specified in this section.
5. Provide written report of findings to Owner/Owner's Representative, with photographs of drop locations.
6. If after testing, the surface does not meet specifications, Contractor shall replace failed areas at no additional cost to the Owner. Patches will not be accepted unless approved by Owner. Contractor shall identify the limits of repair/replacement and solicit Owner's prior approval before proceeding.
7. Retest affected area and seams. Additional testing shall be completed at no cost to the Owner. Contractor shall replace poured in place surface and re-test as necessary until G-max and HIC scores are achieved as indicated in this section.
8. In Field testing costs to be incidental to the surfacing price.

3.7 CLEANING

1. Clean playground safety surfacing system in accordance with manufacturer's instructions.

3.8 PROTECTION

1. Protect completed playground safety surfacing system from damage during construction.
2. Poured-in-Place Surfacing: Do not allow foot traffic on poured-in-place surfacing until a minimum of 80 percent cure is obtained (6 to 48 hours depending on temperature and humidity).
3. Protect the work and adjacent work against damage during progress of the work. Contractor will be responsible for the protection of the playground surfacing until final acceptance of work and will replace any playground surfacing that is damaged or vandalized during construction.

3.9 PIP REPAIR KIT(S)

1. Provide owner with one repair kit for each poured-in-place color that is used on the project. Kit to include top layer material and glue.

END OF SECTION

SECTION 32 9219
LAWN SEEDING

1.0 GENERAL

1.1 Description

A. This work consists of complete construction of lawn areas including: finish grading, tilling, cleaning seed bed, seeding, blanket, fertilizing, weed control, and mowing.

1.2 Submittals

A. Grower and/or supplier's product data sheet showing the percentages and most current grass seed varieties being used in the specified seed mix for Owner/Owner's Rep approval.

B. One seed tag for each seed type used on the site shall be saved and delivered to the Owner.

2.0 MATERIALS

2.1 Seed

A. Seed shall be delivered to the site in the original sacks as received from the producer, and each sack shall be tagged in accordance with the agricultural seed laws of the United States and the State of Illinois. Each sack shall be tagged showing the dealer's guarantee as to the year grown, percentage of purity, percentage of germination and the date of the test by which the percentages of purity and germination were determined. All seed sown shall have a date of test within six (6) months of the date of sowing.

B. Any seed delivered prior to use shall be stored in such a manner that it will be protected from damage by heat, moisture, rodents, or other causes.

C. **New turf** areas shall be seeded with a uniform seed mixture consisting of a total of 60% Perennial Ryegrass using 30% each of two different varieties, and 40% Kentucky Bluegrass using 20% each of two different varieties . Approved seed mix for new turf areas an approved equal:

Field of Dreams Athletic Mixture by ConServ FS

D. **Lawn areas to be renovated** shall be seeded with a uniform seed mixture consisting of 50% Perennial Ryegrass using 25% each of two different varieties and 50% Bluegrass using 25% each of two different varieties. Approved seed mix for areas to be renovated or an approved equal:

Field of Dream Reseeder Mixture by ConServ FS

2.2 Blanket

A. Blanket shall be excelsior for slopes greater than 1:4 and straw based on slopes less than 1:4. Both shall be woven so as to prevent flyaway of fibers. Blanket shall be of consistent thickness, with fibers evenly distributed throughout the entire area of the blanket. The top and bottom of each blanket shall be covered with photodegradable or biodegradable netting. Material shall not contain any weed seed or chemical additives. Blanket stakes shall be bio-degradable (not metal).

2.3 Fertilizer

A. Fertilizer shall be Nitrogen, Phosphorous and Potassium in the following mixes:

1. New Seeding Areas: 13-25-12 with 30% of nitrogen in slow release formula
2. Over-seed Areas: 22-3-11 with 50% of nitrogen in slow release formula

3.0 EXECUTION

3.1 Seeding Operations

A. Remove all debris, including large stones, roots and construction materials. Fill all depressions in lawn area with topsoil prior to top dressing operations. No debris may be buried in pits on the site.

B. Topsoil shall be applied at 6" depth. Topsoil may be blended with sand up to a ratio of 3 parts topsoil to 1 part sand to facilitate application. Contractor shall till; fine grade; remove all clumps, clay, sod clods, and undesirable materials. Seed bed shall be approved by Owner's representative before seeding.

C. Seed shall be applied at the rates listed below for a dense stand with a Brillion, slit seeder, or other mechanical seeder. For new seeded areas, the entire seed bed area shall be covered with bio-degradable blanket. All seed areas must be completely and uniformly covered. Re-seed areas shall have no blanket applied.

3.2 Seeding Rates

A. Seed shall be applied at the following rates - except if dormant seeding is completed in late fall, then rates to be doubled:

Seed	Rate per 1000 square feet
Field of Dreams Athletic Mix	4.5 pounds
Field of Dreams Reseeder Mix (over seed in Spring)	2.5 pounds

3.3 Fertilizing

A. NEW SEEDING AREAS: 1.5 pounds of nitrogen fertilizer shall be applied per 1,000 square feet of turf shall be applied at time of initial seeding. See 2.3 for fertilizer mix. It shall be applied evenly over the planting area.

B. RESEEDED AREAS: 0.75 pounds of nitrogen per 1,000 square feet shall be applied at time of overseeding, unless another amount is specified on plan. See 2.3 for fertilizer mix.

3.4 Repairs

A. The Contractor shall be responsible for the repair of any damage to existing lawns, which may result from his work, and such repairs shall be made swiftly in a thorough and workmanlike manner, with minimum inconvenience to the Owner and users of the site. Where lawn areas have been disturbed or damaged, the damaged lawn areas, ruts and depressions shall be cultivated, filled with topsoil, settled to proper grades and seeded. Repairs shall be made to the satisfaction of the Owner or Owner's representative.

3.5 Maintenance

A. It is the responsibility of the Contractor to maintain all seeded lawn areas; this may include cultivation, reseeding, fertilizing, watering, mowing, and the control of weeds until final acceptance has been granted. The Contractor shall mow

the grass to a three -inch (3") height if it reaches a four-inch (4") height any time prior to final acceptance. The Owner's representative shall inspect the conditions of the stand to determine satisfaction or the need to improve the stand. Satisfaction is based on 95% coverage over the entire new seeding area and over-seed areas. Maintenance shall continue by the Contractor until acceptance has been granted.

3.6 Watering

A. Watering must be started immediately after the seed is installed. Watering should begin as soon as an area large enough to put down a sprinkler is ready.
B. Thoroughly soak the seed and the soil under the seed. It should be moist at least 2 inches deep. Corners shall be noted and may need to be hand watered to ensure full coverage.
C. After the first watering, water enough to keep the soil under the seed moist, but not muddy. In cool weather this may mean watering only every 3 or 4 days. In very hot weather, you may have to water daily. **Do not allow the seed or soil underneath to dry out between watering**.
D. In about two weeks the seed should have begun to knit to the soil underneath and the watering can be lessened to once or twice per week depending on the weather conditions.
E. If an irrigation system is in place, it is the responsibility of the Contractor to ensure that the system is working and is covering all new seed areas. This responsibility continues until the site is turned over to the owner.
F. Watering shall continue and be maintained by the contractor for at least 30 days beyond substantial completion. It is the contractor’s responsibility to meet lawn establishment requirements – additional watering by contractor may be needed.

END OF SECTION

SECTION 32 9300
LANDSCAPING

1.0 GENERAL

1.1 Description

A. This work consists of supplying and installing plant materials; preparing and placing all topsoil, planting mix, fertilizer, mulch, and related items and furnishing and installing ground cover, perennials, annuals, shrubs, and trees. The Contractor shall be responsible for furnishing all materials, equipment, and labor necessary to complete the work and for maintenance in accordance with the plans and specifications.

1.2 Acceptance

A. Acceptance of plant material shall be given by the Owner's Representative before plant material is installed and again after installation. Rejected plants shall be immediately removed from the site at the Contractor's expense.

B. Final inspection of all plantings will be made at the conclusion of the work. The work will be accepted by the Owner upon the satisfactory completion of all work but exclusive of the replacement of plant materials. At the time of final acceptance of the project, all constructed areas must be free of weeds.

1.3 Guarantee Period

A. The guarantee period for all planting shall begin at the date of written acceptance by the Owner or Owner's representative and shall continue for a period of twelve months.

B. The Contractor shall replace as weather conditions permit, all plants 1/3 dead or more, and all plants not in a vigorous, thriving condition noted at the end of the guarantee period.

C. Plants used for replacement shall be of the same size and variety specified in the plant list. Replacement plants shall be furnished, planted and mulched as specified herein and guaranteed for one year following the acceptance of the replacement work at no additional cost to the Owner.

1.4 Utility Responsibility

A. The Contractor is responsible for damage to underground utilities. All locations shall be checked for the presence of utilities. Call JULIE (Joint Utilities Locating Information for Excavators) toll free at 1-800-892-0123.

2.0 MATERIAL

2.1 Planting Mix

A. Planting mix shall be 80% topsoil, 10% mushroom compost, and 10% sand. The three shall be mixed thoroughly. Planting mix shall be free of weed seeds.

2.2 Topsoil

A. Topsoil shall meet technical specification Section 31 2000, Earthwork.

2.3 Mulch

A. Mulch shall be rough cut and shredded hardwoods cured for a minimum of one year. No color additive. No weeds.

2.4 Plant Material

A. Plant materials shall be freshly dug vigorous plants of specimen quality, symmetrical, thickly branched, tightly knit plants, true to species and variety and conforming to the measurements specified in the plant list and complying with ANSI Z60.1-2014. All plants shall be free of disease, insect pests, eggs, larva, and shall have healthy, well-balanced root systems. Specified plants of the same species and variety shall be matched specimens from a single block source and shall not be pruned before delivery. Standards for measurement, branching and grading of plant material shall be in conformance with current codes and standards recommended by the American Association of Nurserymen, Inc., as stated in the American Standard for Nursery Stock

B. Balled and burlapped (BB) plants shall be dug with firm natural balls of earth, with sufficient diameter and depth to include all fibrous and feeding roots. No plants moved with a ball will be accepted if the ball is cracked or broken before or during planting operations.

C. All plants shall have been grown under climatic conditions similar to those in the locality of the project for at least two years. Plants shall have been transplanted or root pruned at least once in the past three years. No heeled-in plants or plants from cold storage will be accepted.

D. Substitutions will not be permitted. If proof is submitted that specified plants or sizes are unobtainable, a proposal will be considered for the nearest equivalent size or variety.

E. All plants shall conform to the measurements specified in the plant list; exceptions are as follows:

1. When size substitutions are necessary, the contractor shall request approval from the Owner's Representative in writing. It is up to the Owner's Representative to approve in writing requested substitutions.

3.0 EXECUTION

3.1 Planting Operations

A. Weather Conditions: Planting shall be done under favorable weather conditions or as authorized by the Owner's Representative.

3.2 Transportation and Delivery

A. All plants that cannot be planted immediately on delivery shall be set on the ground or in a trench and the balls well covered with soil, manure or other acceptable material to prevent freezing, drying or over watering conditions. The Contractor shall notify the Owner's Representative at least 48 hours in advance of the anticipated delivery of any plant material for on-site approval.

B. Plants transported to the site in open vehicles shall be covered with tarpaulins or other suitable covers securely fastened to the body of the vehicles and covered shipments shall be adequately ventilated to prevent overheating of the plants.

C. All plants shall be kept moist, fresh and protected for the entire period during which the plants are being handled in transit or in temporary storage. No plant shall be so bound with rope or wired at any time as to damage the bark, break branches, or destroy the plant's natural shape.

3.3 Installation

A. Prior to excavation, the Contractor will stake all trees and mark shrub locations and perennial bed locations for approval of the Owner's Representative.

Whenever the Contractor is in doubt as to the proper location or spacing of plants, he shall request clarification. The Contractor is responsible for stripping sod from proposed planting areas and leveling soil according to drawings and specifications. This is considered incidental to the contract and will not be paid for separately. All planting pits shall be excavated to the full depth of the plant ball or container. The ball top shall be properly set to finished grade. All excavated material not used in the soil mixture or soil backfill shall be removed and legally disposed of off site.

B. Excavation: The diameter of each planting pit shall be a minimum of twenty-four inches (24") greater than the diameter of the plant ball for trees and large shrubs and twelve inch (12") greater than diameter of small shrubs.

C. Set plants in center of pits plumb and straight and at such a level that after settlement, the base of the plants will be at the finished grade. Set plants upright and faced to give the best appearance or relationship to each other or adjacent structures.

D. When balled and burlapped trees are set, compact planting mixture around base of ball to fill all voids. All burlap, ropes and wires shall be removed from the sides and top of balls. No wire or wire baskets shall remain in the ground after planting.

E. Immediately after the plant pit is back filled, a shallow basin slightly larger than pit shall be formed with a ridge of soil to facilitate watering. Strip sod from around the planting pit to form a six foot (6') diameter circle of bare ground around trees or to form a planting bed for shrubs as shown in the drawings.

F. All non-turf soil surface in planting areas shall be mulched. Mulch shall be no less than three inches (3") deep, and no greater than four inches (4") deep. Mulch shall not come in contact with trunk of trees.

3.4 Pruning

A. Each tree and shrub shall be pruned in accordance with standard horticultural practice to preserve the natural character of the plant and in the manner fitting its use in the landscape design.

1. All dead wood or suckers and all broken or badly bruised branches shall be removed.
2. Pruning shall be done with clean, sharp tools.
3. Flowering trees shall be pruned only to remove dead and broken branches or branches that rub.

3.5 Watering and Maintenance

A. At the time of planting, water is to be applied lightly until six inches (6") to eight inches (8") depth of wetness is met. Every effort shall be made to water from early morning to approximately one (1) hour before mid-day. Where watering systems exists, the Contractor shall utilize the systems in the manner they were intended.

B. Contractor shall water plant material from the point when it is installed to thirty days after substantial completion is met for the entire project. Watering shall take place so that no less than 1" of water is applied to each plant within any seven day period.

C. Prior to final acceptance of the project, the Contractor shall inspect the plantings throughout the growing season and take necessary steps to control insect and blight attack. The Contractor shall also inspect the plantings after severe storm

and exercise all corrective measures required to maintain finished quality appearance and good plant vigor.

D. No pesticides or herbicides shall be applied to any plant material without the approval of the Owner's Representative. Care shall be taken in watering plant material so as not to over water or in any way damage the plants. The Contractor is encouraged to monitor the soil moisture condition frequently and water when necessary to improve the percentage of plant survival. The Owner will not take over watering of plant material until thirty days after substantial completion of the project is met.

3.6 Tree Watering Bags

A. Slow-Release Irrigation Tree Bag: UV-light-stabilized nylon-reinforced polyethylene sheet manufactured for drip irrigation of plants and emptying its water contents over an extended time period. Provide one bag for each new tree installed, incidental to contract. Contractor shall fill bags with water per manufacturer's recommendations based on tree caliper size and weather demands at the time of installation through 30 days beyond substantial completion.

B. Tree bags as manufactured by DeWitt Dew Right, Treegator, or approved equal.

END OF SECTION

SECTION 33 4616
UNDERDRAINAGE

1.0 GENERAL

1.1 Summary

A. This Section covers provision and installation of Under Drains for the Challenge Course

2.0 PRODUCTS

A. General: Furnish drainage pipe complete with bends, reducers, adapters, couplings, collars, and joint materials.

B. Polyvinyl Chloride Pipe: ASTM D 2729.

C. Perforated Polyvinyl Chloride Pipe ASTM D 2729

D. Clean out: shall have a round cast iron top as provided by Jay R. Smith MFG or equal 4240 series and have a ductile iron frame and cover for cleanout, ASTM A-536 and proof loaded as per AASHTO M306. Castings must be proof loaded as per AASHTO M306. All lids must be marked with a CO with raised capital letters cast in cover.

OR

Provide clean out as on plans.

E. Filter Fabric

1. Manufacturer's standard nonwoven geotextile fabric of polypropylene or polyester fibers, or a combination of them. Use "3401 Geofabric" by Typar or approved equal.

2.1 Materials

A. Backfill materials and their installation shall be as described in Section 31 2000 - Earthwork

3.0 EXECUTION

3.1 Inspection

A. General: Examine subgrade surfaces to receive under drainage system to verify suitability. Do not begin installation until subsurface conditions are satisfactory to accept drainage system.

3.2 Installation

A. Under Drainage System: Excavate for under drainage system after subgrade material has been compacted but before drainage fill course has been placed. Provide a clear horizontal distance between perforated drain pipe and trench wall on both sides not less than 4”, unless otherwise shown. Grade bottom of trench excavations to required slope and compact to a firm, solid bed for drain system.

B. Apply a minimum 4” layer of compacted bedding material below the perforated drain pipe, raising low areas and creating a firm base at the correct levels. Where unsatisfactory bearing soil occurs, excavate to a minimum depth of eight inches below the pipe invert and place compacted granular fill to reach invert levels.

C. Overlay bedding with one layer of synthetic drainage fabric. Overlap fabric edges at least 4 inches.

D. Laying Drain Pipe: Lay drain pipe on compacted bedding. Provide full bearing for each pipe section throughout its length to true grades and alignment, and continuous slope in direction of flow.
    1. Lay fabric wrapped perforated pipe with perforations down and joints tightly closed in accordance with pipe manufacturer's recommendations. Provide collars and couplings as required.
E. Join and install PVC pipe as follows:
    1. Installation in accordance with ASTM D 2321.
F. Testing Drain Lines: Test or check lines before backfilling to assure free flow. Remove obstructions, replace damaged components, and retest system until satisfactory. Owner must approve operation of system prior to covering it up.
G. Washed Gravel: Place layer of washed gravel over drainage pipe and drainage fabric to depth indicated or, if not indicated, to a depth of not less than 4 inches around sides and 12 inches on top of drainage pipe.
H. Fill to Grade: Apply fabric and backfill as required on plans.

END OF SECTION