

PROJECT TECHNICAL SPECIFICATIONS

1. GENERAL NOTES

- A. DEFINITIONS
 - (1) Whenever in these Project Technical Specifications the following terms are used, the intent and meaning shall be interpreted as follows:
 - (a) Governing Agency: Government or regulatory entity with authority to implement and enforce specific laws, permit requirements, or construction requirements. City of Naperville Standard Specifications for Construction and Standard Details are available online at <https://www.naperville.il.us/projects-in-naperville/standard-specifications-for-construction/>.
 - (b) Owner: Entity or individual for whom the project is being performed.
 - (c) Contractor: Entity or individual responsible for performing construction activities and furnishing all labor, materials, equipment and other incidental work necessary for the successful completion of the project and for carrying out all duties and obligations imposed by the contract.
 - (d) Engineer: Licensed professional engineering entity, or licensed professional engineer and/or authorized agent(s), who represent the Owner during the construction phase of the project work.
 - (e) Geotechnical Engineer: Licensed professional engineering entity, or licensed professional engineer and/or authorized agent(s), who, in representing the Owner, is involved with the principles, properties and behavior of earth materials with regard to the project work.
 - (f) Project Drawings / Plans: The drawings that define the required site development activities and improvements.
 - (g) IDOT Standard Specifications: The current edition of the Illinois Department of Transportation's (IDOT) "Standard Specifications For Road & Bridge Construction" including all applicable current supplemental specifications and special provisions.

B. GOVERNING REGULATIONS

- (1) All project activities and improvements shall be in accordance with the Governing Agency regulations. In the event of conflict with these Project Technical Specifications, or the indicated Reference Specifications, the Governing Agency regulations shall apply.

C. REFERENCE STANDARDS AND SPECIFICATIONS

- (1) Site development activities and improvements, including site preparation and demolition, earthwork, sanitary sewers, storm drainage, water supply, pavement, lighting, landscape improvements, and erosion/sediment control measures shall be in accordance with the Reference Specifications indicated throughout these Project Technical Specifications. All Reference Specifications shall be incorporated into and made a part of the Project Technical Specifications. When the Reference Specifications conflict with Project Technical Specifications, Project Technical Specifications shall govern.

D. CONTRACT GENERAL CONDITIONS

- (1) These Project Technical Specifications supplement the engineering plans, the Agreement between Owner and Contractor, and other supplemental documents that comprise the overall project Contract. These Project Technical Specifications address the technical requirements of the project design as indicated on the Project Drawings (Plans). Unless specifically addressed in the Plans or these Project Technical Specifications, general conditions such as bid items, quantities, unit prices, terms of payment, change management, construction schedule, submittals, and other conditions are defined in the Agreement between Owner and Contractor.
- (2) The Contractor shall be responsible for complying with applicable Federal, State, and local requirements, together with exercising precaution at all times for the protection of persons (including employees) and property. It is the sole responsibility of the contractor to initiate, maintain, and supervise all safety requirements, precautions, and programs in connection with the work.
- (3) The Contractor shall indemnify and hold harmless the Owner and Engineer for any and all injuries and/or damages to personnel, equipment, and/or existing facilities occurring in the course of the site improvement construction work described in the Plans and these Project Technical Specifications.
- (4) The Contractor shall obtain all required construction permits in accordance with local, state, and federal regulations.
- (5) The Contractor shall guarantee all materials and workmanship for a period of 1 year following final acceptable by the Owner and the Governing Agencies.

E. QUALITY CONTROL OF MATERIALS

- (1) Materials shall be inspected, sampled, and tested before, during, and after they are incorporated into the work. The timing of these activities shall be as appropriate for the materials being placed and the properties (composition, gradation, density, strength, compaction, etc.) being examined. The requirements for quality testing are specified within the applicable sections of these Project Technical Specifications.
- (2) Materials not conforming to the requirements of the Project Technical Specifications at the time they are used or installed will be considered unacceptable and shall be removed and replaced with acceptable materials properly installed in place at the Contractor's expense.
- (3) When material test results are not within specification tolerances, the supplier shall make appropriate adjustments at its source to correct the issue.
- (4) Material inspections, sampling, and testing shall be performed by an independent testing agency/laboratory with suitable capabilities and experience. The testing entity shall be retained by Contractor or Owner, as required or as specified in the Contract Documents.

2. EXISTING CONDITIONS & SITE PREPARATION

- A. EXISTING CONDITIONS
 - (1) Existing conditions as depicted on the Plans are general and illustrative in nature. It is the responsibility of the Contractor to examine the site and be familiar with existing conditions prior to initiating construction. If conditions are encountered, before or during construction, that are significantly different than those shown on the Plans, Contractor shall notify the Engineer immediately.
 - (2) It is not the Engineer's intent that any single plan sheet in the Plans fully depicts all work associated with the project. The Contractor shall be familiar with all sheets in the Plans for construction. Contractor shall similarly be familiar with all structural, architectural, mechanical, electrical, or other plans, as necessary, for the construction of the overall project.
 - (3) Contractor shall protect all property corner pins, permanent monuments, and permanent benchmarks during construction. If disturbed, Contractor shall have items reset by a licensed surveyor at Contractor expense.
 - (4) Contractor shall protect all existing utilities, structures, and features to remain. Any items to remain that have been disturbed or damaged as a result of construction shall be repaired or replaced at Contractor expense.

B. EXISTING UTILITIES

- (1) Underground utility information shown on the Plans may be based upon a combination of topographic survey data, field observations, historical utility maps, Owner-provided information, or other available data for the Site. The Plans constitute a representation of utility locations from best known information available to the Engineer. There is no guarantee that the utilities shown comprise all such utilities in the area, either in service, or abandoned.
- (2) Contractor shall be responsible for contacting all agencies, utility companies, and pipeline companies known or suspected to have buried cable, duct, sewer, pipes, etc., which may conflict with the project improvements to determine the location and depth of the existing utilities.
- (3) If conflicts occur after the existing utility conditions have been determined by field investigations, Contractor shall immediately notify Engineer and either:
 - (a) Adjust the location and depth of the proposed improvements as directed by Engineer in cooperation with the Owner, or
 - (b) If relocation of proposed improvements is not feasible, Contractor shall work with Owner and Engineer to make arrangements with the affected utility companies to have their utilities protected or relocated.
- (4) All utility disconnection, removal, relocation, cutting, capping, and/or abandonment shall be coordinate with the appropriate utility company / agency.

C. EROSION / SEDIMENTATION CONTROL

- (1) Erosion/sedimentation control measures, as indicated on the Plans and as required elsewhere in these Project Technical Specifications, shall be employed during the course of construction operations and until suitable ground covers are established on all construction site areas.
- (2) Erosion/sedimentation control measures shall be properly installed and functional prior to any earth disturbing activities.

D. CONSTRUCTION ACCESS

- (1) Construction ingress-egress shall be limited to defined connections to adjacent driveways and public roadways, and as indicated on the plans and as required elsewhere in these Project Technical Specifications.

E. TRAFFIC CONTROL

- (1) The Contractor shall provide necessary traffic control for work performed in active transportation areas, including any specific traffic control requirements as indicated on the Plans.

F. TEMPORARY CONSTRUCTION FENCING

- (1) Temporary construction fences shall be installed where indicated on the Plans and where required by the Engineer to restrict access to and from certain areas. Such fences shall be maintained during construction and removed when all work activities are completed.
- (2) Temporary construction fences shall consist of 48-inch-high plastic fabric, metal fabric, or wood lattice fence material (approved by the Engineer, prior to placement) attached to suitable metal posts that are set at 6-foot (or less) intervals and anchored at least 18 inches into the ground.
- (3) Temporary chain link construction fences shall be provided where indicated on the Plans.

G. TREE AND LANDSCAPE PROTECTION

- (1) Highly visible temporary fences shall be placed around trees and landscape areas designated for protection. Vehicles, equipment, and material storage shall not be allowed within the protection zone.

- (2) Vehicle and equipment parking and material storage shall not be permitted within the drip line of any tree, even if the tree is not enclosed in a protective barrier. Vehicles and equipment shall avoid travel within the drip line of trees whenever possible.
- (3) Overhanging tree branches within the construction zone that are expected to come in contact with construction equipment shall be properly removed (sawcut) prior to construction in the area. Engineer approval is required before a branch is removed.
- (4) Roots of trees that are to be preserved shall be pruned (cut) where indicated on the Plans or required by the Engineer. Tree roots shall be cut with appropriate root pruning equipment to a depth of 24 inches (minimum) before construction begins. The cut shall be made approximately 12 inches closer to the tree than the construction limit (edge of excavation).

H. MATERIAL DISPOSAL

- (1) All demolition waste and construction debris shall become the property of the Contractor unless otherwise stated in the Agreement between Owner and Contractor.
- (2) The following shall be removed from the construction site and properly disposed of in a legal manner. Unless otherwise stated in the Agreement between Owner and Contractor, the cost of removal and disposal shall be included in the fixed or unit prices for the various contract pay items and no additional payment will be allowed thereafter.
 - (a) All surplus excavated materials.
 - (b) Construction and demolition debris such as building materials, asphalt and concrete pavement materials, culvert and sewer pipe, utility and drainage structures, retaining walls (concrete, stone and timber), trees, shrubs, and miscellaneous landscape features removed during the installation of the project improvements.
 - (c) If Contractor intends to dispose of generated construction / demolition debris materials or excavated soils at a regulated clean construction / demolition debris (CCCD) or uncontaminated soil fill operation, the contractor shall be responsible for taking all actions and preparing all documents required by 35 Illinois Administrative Code 1100 prior to transport of the materials / soil to the disposal facility. Materials and soils that do not meet CCDD and uncontaminated soil constituent limit requirements shall be disposed of at a permitted landfill facility. The cost of testing and documentation to evaluate the materials / soils and determine proper disposal requirements shall be as defined in the Agreement between Owner and Contractor.
- (4) See Earthwork Operations specification section for additional requirements.

I. EARTHWORK OPERATIONS

- A. GENERAL
 - (1) Except where modified by the following Project Technical Specifications, all earthwork operation and compaction requirements shall be in conformance with the material, installation and testing requirements of the IDOT Standard Specifications.
 - (2) Earthwork shall include site clearing, tree and hedge removal, topsoil and rootmat stripping and stockpiling, earth and fill material excavation, construction of embankments and slopes, placement and compaction of non-structural fill areas, pavement areas, and structural fill areas, removal and disposal of surplus and unsuitable excavated materials, topsoil placement, and final shaping and trimming to the lines and grades indicated on the Plans.
 - (3) Prior to commencement of earthwork operations, Contractor shall notify any Utility Protection Service or other Governing Agency, as may be required.

J. SITE CLEARING

- (1) All construction site features and items such as structures, foundations, fences, pavements, rubbish/debris, trees, shrubs, and surface vegetation shall be removed where necessary and as indicated on the Plans for the construction of the project improvements.
- (2) No tree, shrub, or surface vegetation shall be removed unless it is marked for removal or the Engineer specifically authorizes its removal.
- (3) When indicated on the Plans, brush, shrubs, branches and small trees shall be shredded or chipped using suitable mechanical equipment. The resulting material shall be stockpiled on-site, as directed by the Engineer, for the Owners' future use. Tree trunks, branches, and removed stumps too large to be chipped shall be removed from the site and disposed of.
- (4) Tree stumps shall be removed by excavation or grinding to a depth of not less than 12 inches below ground surface. Material resulting from stump grinding shall be spread on the ground and excavated as part of topsoil or rootmat stripping.
- (5) All items and materials not specifically required to remain on-site shall be removed from the site and disposed of in a legal manner.

K. TOPSOIL AND ROOTMAT REMOVAL

- (1) Existing topsoil shall be removed from proposed pavement and building areas, non-structural fill areas, and structural fill areas. Sufficient existing topsoil shall be stockpiled for future use as topsoil replacement. When approved by Geotechnical Engineer, stripped topsoil may be used as non-structural fill to design elevations. Topsoil not used for replacement or for non-structural fill shall be removed from the site and legally disposed of, unless directed by Owner to stockpile on-site for future use. Stockpile locations shall be as authorized by Owner.
- (2) Topsoil supplied from off-site sources shall be natural, fertile agricultural soil material capable of sustaining vigorous plant growth. It shall contain not less than 4% nor more than 10% organic matter, as determined in accordance with AASHTO T194. It shall contain not less than 12% nor more than 50% clay and the sand content shall not exceed 55%, both as determined in accordance with AASHTO T88. The pH shall be between 5.0 and 8.0. Topsoil material shall be relatively free from large roots, sticks, weeds, brush, stones larger than 1-inch in diameter, or other litter or waste products. It shall be a loamy mixture having at least 90% passing the No. 10 sieve.
- (3) Within proposed pavement and building areas where there is no existing topsoil, the surface layer of organic material (friable soil containing roots or other vegetative matter) shall be removed before starting fill and compaction operations. Such removed material may be used as non-structural fill. If this material is not used as non-structural fill, it shall be removed from the site and legally disposed of.

L. EXCAVATION

- (1) Existing earth and fill materials within the project construction limits shall be excavated as necessary to establish the elevations, contours, and drainage patterns indicated on the Plans. Excavated materials classified by Geotechnical Engineer as suitable structural fill material shall be used to construct compacted subgrades within the project building and pavement areas. Excess materials not needed for filling or for the construction of berms or embankments shall be removed from the site and legally disposed of, unless directed by the Engineer or Owner to stockpile on-site for future use. Stockpile locations shall be as authorized by the Owner.
- (2) Rock materials within the project construction limits shall be excavated to a minimum of 6 inches below subgrade levels of proposed pavements and pipe bedding. Rock materials shall be removed to a minimum of 18 inches below building and structural foundations. Rock materials shall be defined as boulders one cubic yard or greater in volume and all materials in ledges, bedded deposits, and conglomerate deposits that exhibit the physical characteristics of rock, as determined by Geotechnical Engineer. Excavated rock materials not used for filling or for the construction of berms or embankments shall be removed from the site and disposed of, unless directed by the Engineer or Owner to stockpile on-site for future use. Stockpile locations shall be as authorized by the Owner.
- (3) Excavated materials classified by the Geotechnical Engineer as unstable or unsuitable for structural fill purposes and not for non-structural fill, shall be removed from the site and legally disposed of, unless directed by the Engineer or Owner to stockpile on-site for future use. Stockpile locations shall be as authorized by the Owner.
- (4) Excavations shall be maintained in a well-drained condition at all times. Temporary drainage (dewatering) facilities shall be provided where surface runoff is not possible or effective. Such facilities shall be operated during the entire course of earthwork operations. Dewatering facilities shall include appropriate erosion and sediment control measures, as indicated elsewhere in these Project Technical Specifications. Unless otherwise stated in the Agreement between Owner and Contractor, the cost of temporary drainage facilities and dewatering activities shall be considered incidental to the various pay items of the work.

M. FILL PLACEMENT

- (1) Before placing any fill within pavement or structural areas, the existing subgrade shall be compacted as indicated in the "Compaction" section of these Project Technical Specifications. Pavement subgrade areas shall be proof-rolled to check for soft, unstable, or otherwise unsuitable materials and approved by a Geotechnical Engineer prior to paving operations. Where possible, proof-rolling shall be accomplished with at least four passes of a fully loaded tandem axle dump truck. Below-grade footing or foundation areas shall be inspected by a Geotechnical Engineer prior to foundation installation. Soft, unstable, or otherwise unsuitable materials shall be removed and replaced as directed by Geotechnical Engineer.
- (2) Structural fill materials shall be soil materials that can be compacted to develop a stability satisfactory to the Geotechnical Engineer. Structural fill materials shall not contain frozen material or any material which, by decay or otherwise, might result in site foundation settlement.
- (3) Material Types For Structural Fill Purposes:
 - (a) Suitable Fine-Grained Soils - Soil materials that comply with ASTM D2487 Soil Classification Group CL and meet the following requirements:
 - (i.) Laboratory maximum dry density when determined with AASHTO T99.
 - (ii.) Plasticity Index greater than 12.
 - (iii.) Liquid Limit less than 45.
 - (iv.) Particle size distribution with greater than 50% passing the No. 200 sieve.
 - (b) Suitable Coarse-Grained Soils - Soil materials that comply with ASTM D2487 soil classification groups GW, GM, SP, SW, and SC.
 - (c) Bituminous concrete and granular base materials removed from existing pavement areas may be used as structural fill, subject to gradation, placement, and compaction control by Geotechnical Engineer.
 - (d) Impervious clay layers (liners) shall be constructed of fine-grained soils within the CL classification that have a Plastic Index greater than 15 and a moisture content greater than optimum and are free of stones bigger than 1 inch average size.
 - (e) Unsuitable Fill - Soil materials that are not in conformance with the stated criteria for structural fill material shall not be used as structural fill.
 - (f) Installed fill layers softened or otherwise damaged by rain, ponded water, or construction activities shall be scarified, dried, and recompressed, or removed and replaced. This work, even if performed after lift or fill acceptance, shall be incidental to the various pay items of the work.

N. UNSUITABLE SUBGRADE CONDITIONS

- (a) Within areas of new or reconstructed pavements, specific requirements for removal and remedial procedures shall be as directed by Geotechnical Engineer. Soft or otherwise unacceptable subgrade materials shall typically be removed to a depth where the minimum in situ unconfined compressive strength is 2.0 tsf and the in situ moisture content is no more than 3 percentage points above the optimum moisture content per ASTM D1557. When the depth of unsuitable material is excessive and does not warrant complete removal, remedial procedures will typically require partial removal of unsuitable subgrade material, placement of a geotextile fabric (MIRAFI 600X or equivalent), and sufficient aggregate fill (IDOT CA-1 or alternate acceptable granular material) to the required subgrade level. Depths of unsuitable subgrade removal will be as directed by the Geotechnical Engineer. Alternative procedures may be required depending on the conditions encountered.
- (b) Removal of unsuitable materials and installation of replacement fill material under and adjacent to proposed buildings and structures shall be as specified by Geotechnical Engineer.
- (c) Payment for removal and replacement of unacceptable materials and the installation of geotextile fabric and aggregate fill shall be as indicated in the agreement between Owner and Contractor. Such payment shall include all work necessary for removal and disposal of unsuitable materials, supply and placement of fabric and aggregate materials, supply, placement and compaction of additional structural fill material, if required, and any dewatering required during these activities.
- (7) Where necessary, structural fill materials shall be placed and compacted under proposed pavements, buildings, and structures. Compacted structural fill shall be placed to required subgrade elevations.
- (8) Unsuitable materials may be placed within non-structural fill areas only where fill is required to obtain final subgrade levels. If borrow pits are used to obtain structural fill material, unsuitable materials may be used to bring the borrow areas to grade. Placement of such materials shall be limited to areas and depths authorized by the Geotechnical Engineer. If sufficient acceptable placement areas are not available, remaining unsuitable and unsatisfactory materials shall be removed from the site and legally disposed of.
- (9) If necessary, Contractor shall provide sufficient suitable structural fill material from off-site sources as necessary to complete earthwork operations to the required levels and elevations indicated on the Plans. Structural fill materials shall be in conformance with the stated criteria for structural fill. Contractor shall provide the Geotechnical Engineer access to the proposed off-site sources to take samples and evaluate materials.

O. FILL COMPACTION

- (1) Fill materials shall be placed in layers (lifts) and compacted in accordance with the following specified requirements. Lift thickness shall not exceed 8 inches (loose condition) and the fill material (when compacted) shall have a moisture content within the limits of -1 to +3 percentage points of optimum value. Specific lift thickness and moisture content shall be as determined by the Geotechnical Engineer to obtain the required compaction and strength of material in place.
- (2) Cohesive soils and well-graded aggregate mixtures shall be sampled and tested to determine the laboratory maximum density and optimum moisture content (control values) of the material. The test method shall be the ASTM Standard as indicated below.
- (3) Free-draining cohesionless soils and aggregate mixtures shall be sampled and tested to determine the laboratory relative density (control value) of the material.
- (4) Laboratory density and moisture tests shall be performed to determine the control values for each type and source of material to be used. One test of laboratory maximum density and optimum moisture content shall be performed for each 300 cubic yards of fill and backfill material, and when any change in material occurs that may affect the maximum density or optimum moisture content values.
- (5) Aggregate supplier shall provide a written certification that the aggregate gradation and quality conforms to the project requirements. If a certification is not provided, gradation and quality tests shall be performed for each 300 cubic yards of fill and/or in-place source material.
- (6) Non-Structural Areas: The top 6 inches of existing subgrade and all layers of cohesive soil and well-graded granular fill materials shall be compacted to at least 90% maximum dry density, as determined by the Standard Proctor Method (ASTM D698). Free-draining aggregate and soil materials (ASTM D4253 & D4254) shall be placed and compacted as specified by the Geotechnical Engineer.
- (7) Pavement Areas: The top 6 inches of existing subgrade and all layers of cohesive soil and well-graded granular fill materials shall be compacted to at least 93% maximum dry density, as determined by the Standard Proctor Method (ASTM D698). Free-draining aggregate and soil materials (ASTM D4253 & D4254) shall be placed and compacted as specified by the Geotechnical Engineer.
- (8) Building Areas: The top 6 inches of existing subgrade and all layers of cohesive soil and well-graded granular fill materials shall be compacted to at least 95% maximum dry density, as determined by the Standard Proctor Method (ASTM D698). Free-draining aggregate and soil materials (ASTM D4253 & D4254) shall be placed and compacted as specified by the Geotechnical Engineer.
- (9) Impervious Clay Liners: All layers of clay fill material shall be compacted to at least 92% maximum dry density, as determined by the Standard Proctor Method (ASTM D698).
- (10) Soil and aggregate fill materials compacted in place shall be field tested to determine in-place density and moisture values. A nuclear density gauge shall be used in accordance with ASTM D6938 to measure in-place density/moisture values of cohesive soils and well-graded aggregate materials, unless specified by the Geotechnical Engineer. Other testing equipment is more suitable for the type of material being tested. The dry unit weight of the in-place compacted material shall be compared to its control value to determine the percent compaction achieved.
- (11) Frequency of fill material moisture content and compaction tests shall be as follows, unless otherwise indicated by Geotechnical Engineer.
 - (a) When using materials from exposed stockpile, excavation, or borrow area sources, a minimum of two moisture content tests per day shall be performed for each type and source of material being placed during stable weather. During unstable weather, moisture content tests shall be performed as determined by Geotechnical Engineer.
 - (b) Within pavement areas, one in-place density test shall be performed for each 6,000 square feet, or fraction thereof, of each lift of material placed during each day.
 - (c) Under building/structure ground slabs and mat foundations, one in-place density test shall be performed for each 3,000 square feet, or fraction thereof, of each lift of material placed during each day.
 - (d) Under building/structure wall footings, one in-place density test shall be performed for each 100 linear feet, or fraction thereof, of each lift of material placed during each day.
 - (e) Under building/structure columns footings, one in-place density test shall be performed for each footing, of each lift of material placed during each day.

P. MOISTURE CONTROL

B. PAVEMENT REPLACEMENT/REPAIR
 (1) Existing pavements removed for excavation purposes or damaged by construction operations shall be removed and replaced in conformance to the material and construction requirements of the IDOT Standard Specifications and the requirements of the subsequent portions of this specification section.
 (2) Asphalt and concrete pavements shall be sawcut prior to excavation. Damaged or jagged pavement edges shall be neatly sawcut and removed prior to installing new pavement.
 (3) Replacement material types and thickness shall be as indicated on the Plans.
 (4) Pavement repair limits shall be as indicated on the Plans. Pavement repairs outside of these limits shall be at the Contractor's expense.

C. SUBGRADE PREPARATION
 (1) Prior to placement of pavement material, all subgrade areas shall be proof-rolled to check for possible unsuitable or unstable soil conditions. Proof-rolling shall be witnessed by the Geotechnical Engineer. Should unsuitable or unstable material be encountered within pavement areas, unsuitable/unstable material shall be removed to a depth as described in the Earthwork Section of these Project Technical Specifications. Such materials shall be replaced with suitable structural fill material and compacted in place as specified by Geotechnical Engineer. When complete removal of the unsuitable material is not warranted or feasible, remedial procedures (as required by Geotechnical Engineer) shall be used.
 (2) Installed structural fill and excavated subgrade damaged by construction traffic, ponded water, or other causes within Contractor's control shall be replaced or repaired at Contractor's sole expense.

D. PAVEMENT MATERIALS
 (1) Various pavement types, materials, and thicknesses shall be as indicated on the Plans.
 (2) Aggregate base courses shall be Aggregate, Type B (100% crushed). Aggregate gradation shall be CA-6, except where permeable base course material gradation is specified on the Plans. Aggregate materials shall conform to IDOT Specifications Article 1004.04, except that the use of crushed concrete shall not be allowed.
 (3) Permeable base course material shall be Aggregate, Type C (100% crushed). Aggregate gradation shall be CA-7, except where alternate material gradation is specified on the Plans. Aggregate materials shall conform to IDOT Specifications Article 1004.04, except the use of crushed concrete shall not be allowed.
 (4) Hot-mix asphalt (HMA) pavement materials and mixtures shall be in accordance with Sections 406, 407, 1030 and 1031 of the IDOT Standard Specifications.
 (5) HMA mixture Requirements

Item	Mixture	AC	Type	Voids
Surface Course	HMA, Mix D, N50	PG	64-22	4%
Binder Course	HMA, IL-19, N50	PG	64-22	4%

(6) Aggregate materials shall meet or exceed the following strength requirements:
 Aggregate, Type B (100% crushed) 80 IBR
 Granular Material, Type B 30 IBR

(7) Binder and surface course mixtures may contain reclaimed asphalt pavement (RAP) material resulting from the cold milling or crushing of existing hot-mix asphalt (HMA) pavements. Use of RAP material in new pavement courses shall be in conformance with applicable IDOT requirements.
 (8) Bituminous prime coats shall be in accordance with IDOT Specifications Article 406.05. Application rates shall be follows with the required rate to be specified by Engineer:
 HMA binder or base - 0.05 to 0.10 gallons/S.Y.
 Aggregate base - 0.25 to 0.50 gallons/S.Y.

(9) Portland cement concrete (PCC) for curbing, vehicle pavements, sidewalks and support slabs on-grade shall conform to IDOT requirements (3500 psi at 14 days, 5% to 8% air-entrainment) and shall be properly cured in-place. Vehicle pavements shall be Class PV. Curbing, sidewalks and support slabs shall be Class SI.
 (10) PCC curbing shall have expansion joints complete with dowel bars (AASHTO M227), dowel bars and preformed joint filler (AASHTO M213). PCC curbing shall contain continuous reinforcing bars (AASHTO M31).
 (11) Sub-base material under PCC pavements and curbing shall be Subgrade Granular Material, Type B (100% crushed).
 (12) PCC pavements other than sidewalks shall be provided with contraction, construction, and isolation joints complete with load transfer dowel assemblies, tie bars, and joint material (poured sealer, preformed filler, or elastomeric compression seal) as indicated on the Plans. Joint components, materials, and construction shall be in conformance to applicable IDOT Standard Specifications and IDOT Standard 420001.
 (13) Welded wire fabric shall be placed in PCC pavements where indicated on the Plans. Welded wire fabric shall conform to the requirements of AASHTO M55.
 (14) Where indicated on the Plans, PCC pavement shall be reinforced with polypropylene fibrillated fibers (ASTM C1116 Type 111, 4.1.3) specifically manufactured to an optimum gradation for use as concrete secondary reinforcement. Fibers shall be added to the concrete mix at the rate of 1.5 pounds per cubic yard. Mixing times and speeds shall be as specified in ASTM C94.

E. PAVEMENT MATERIAL QUALITY CONTROL
 (1) Hot Mix Asphalt Pavement
 (a) The HMA supplier shall provide a written certification that the HMA material conforms to the Project Technical Specifications.
 (b) Specified in-place percent compaction values shall be based on the representative laboratory densities provided by the HMA supplier for the various HMA design mixes to be installed.
 (c) The installation of all HMA pavement components (base, binder, and surface courses) and placement lifts shall be inspected and tested to verify compliance with the specified material compaction, temperature, and lift thickness requirements.
 (d) One in-place density test, to determine in-place percent compaction, shall be performed for each 2,000 square feet, or fraction thereof, of each lift of material placed during each day.
 (e) Measurements to determine HMA temperatures at time of compaction and lift thicknesses shall be performed on a periodic basis during the HMA installation operations. The number of temperature and lift measurements shall not be less than the number of density tests performed during the operations.
 (f) If the Project Technical Specifications require pavement cores of the completed work, one core shall be taken for each 4,000 square feet of the installed pavement area.
 (2) Portland Cement Concrete Pavement
 (a) The concrete supplier shall provide a written certification that the concrete mix is in accordance with the Project Technical Specifications.
 (b) Concrete delivered to the work site shall be field-tested before placement to verify that the slump, temperature, and air content values of the material complies with the Project Technical Specifications. Air content, slump, and temperature shall be performed each time a set of test cylinders is prepared. If the air content does not conform to the Project Technical Specifications, additional tests shall be performed on each truckload of concrete until the air content is determined to be within the specified tolerance range. If slump values exceed the maximum specified amount, when excessive variation in the workability of the concrete is observed, or when excessive crumbing or clumping is observed along the edges of slip-formed concrete, additional slump tests shall be performed on the same, or subsequent, truckloads until slump is determined to be within the specified tolerance range.
 (c) Representative samples of the concrete mix shall be placed in a set of five standard cylinders for compressive strength testing. The cylinder sets shall be delivered to the material testing laboratory within 32 hours of taking the samples. The cylinders shall be tested for compressive strength 7 days after the samples were taken. Two cylinders shall be tested 14 days after the samples were taken. One cylinder shall be held in reserve. A sample set (five cylinders) for strength testing shall be taken for each class of concrete not less than once a day, nor less than once for each 100 cubic yards of each class of concrete poured in place.
 (d) Concrete delivered to the work site shall be subject to Governing Agency limitations for haul time and material temperature.

F. COMPACTION
 (1) Aggregate base course and HMA material shall be placed in layers and compacted. Layer thicknesses shall be as indicated in the applicable IDOT Standard Specifications for the various pavement components and materials. Where layer thickness variation is permitted, thicknesses installed shall be as determined by the Geotechnical Engineer to obtain required compaction and strength of material in place.
 (2) Aggregate base course and granular sub-base materials shall be compacted to not less than 95% maximum dry density determined in accordance with the Standard Proctor Method (ASTM D698).
 (3) Free-draining granular materials (porous granular embankment and permeable base course material) shall be placed and compacted as specified by the Geotechnical Engineer.
 (4) HMA binder and surface course mixtures, HMA base course, and HMA shoulder mixtures shall be placed and compacted in accordance with the requirements of the applicable IDOT Standard Specifications.
 (5) Aggregate base course material shall be graded and compacted the same day it is placed on the subgrade.

G. GRADING AND SURFACE TOLERANCES
 (1) Surface elevations of completed aggregate bases and sub-bases shall not exceed design surface elevations by more than 1/4 inch. Surface elevations less than design value shall be corrected by adding aggregate or by installing additional thickness of required HMA or PCC pavement material. Such additional HMA or PCC pavement shall be provided at Contractor's expense.
 (2) Allowable final surface variation of HMA and PCC pavements (tested with a 10-foot straightedge) shall not exceed 1/4 inch, but Engineer has the right to require corrective measures when variations less than the specified tolerance cause obvious drainage problems. Corrective measures required when the allowable variation is exceeded shall be as indicated in IDOT Specifications Articles 407.09 and 420.10.

H. PAVEMENT THICKNESS TOLERANCE
 (1) HMA pavements that have a thickness deficiency of more than 10% shall be removed and replaced if required by Engineer.
 (2) PCC pavements (including sidewalks and slabs on-grade) that have a thickness deficiency of more than 1/8 inch or 10% (whichever is less) shall be removed and replaced if required by Engineer.
 (3) Determination of pavement thickness shall be as indicated in IDOT Specifications Articles 407.10 (HMA) and 420.15 (PCC).

(4) Thin pavement removal and replacement shall be at Contractor's expense.

I. PC CONCRETE PROTECTIVE COAT
 (1) PCC vehicle pavements and PCC sidewalks immediately adjacent to vehicle pavements shall be given a lined oil mixture protective coat treatment (two coats, each at an application rate of not more than 50 S.Y. per gallon of mixture) in accordance with IDOT Specifications Article 420.18 and Section 1023.

PC CONCRETE CURING
 (1) PCC pavement and sidewalks to receive a protective coat treatment shall be cured by means of Methods (1), (2), or (3) of IDOT Specifications Article 1020.13 (waterproof paper, polyethylene sheeting, or wetted burlap).
 (2) Concrete surfaces not to receive such treatment can be sealed with membrane curing compound - Method (4).
 (3) The curing period in all cases shall be at least 72 hours.
 (4) Hot or cold weather concrete curing methods and time periods shall be in accordance with ACI 305 and ACI 306 for hot and cold weather respectively.

J. PAVEMENT MARKINGS AND MARKERS
 (1) Pavement markings and markers shall be as indicated on the Plans. Parking spaces shall be defined with 4-inch-wide lines. Stop lines on private drives shall be 16 inches wide.
 (2) Pavement markings on driveways and parking areas shall be of a paint suitable for such use according to IDOT Standard Specifications. Materials, installation, and equipment shall meet the requirements of IDOT Standard Specifications Section 780. Required markings shall be as indicated on the Plans.
 (3) Pavement lane and auxiliary markings on public roadways shall be reflectorized thermoplastic material conforming to IDOT Standard Specifications. Materials, installation, and equipment shall meet the requirements of IDOT Standard Specifications Section 780.
 (4) Pavement markings words and symbols shall conform to the dimensions and spacing specified in the Illinois Manual on Uniform Traffic Control Devices and on IDOT Standard 780001.
 (5) Raised reflective pavement markers shall be provided where shown on the Plans. Marker materials and installation shall meet the requirements of IDOT Specifications Section 781.
 (6) Existing markings and markers shall be removed as necessary to delineate realigned traffic lanes. Removal shall be in accordance with IDOT Specifications Section 783.

K. ACCESSIBLE PARKING SPACES
 (1) Accessible parking spaces shall be in accordance with Illinois Accessibility Code requirements. Each space shall be 16 feet wide and be provided complete with a painted striped aisle (8 feet wide with diagonal 4-inch lines), a standard accessible symbol painted on the pavement, and standard post- or wall-mounted signs (R7-8 "reserved parking" with accessible symbol, R7-8a "van accessible" and R7-1101 "250 fine").
 (2) Required signs (R7-8, R7-8a and R7-1101) shall be mounted on a post or wall located at the front center of the parking space, and no more than 5 feet horizontally from the front of the space. The bottom of the lowest sign shall be a minimum of 4 feet above finished grade.
 (3) Signposts shall conform to AASHTO and IDOT standards for "break-away" design.
 (4) The pavement area behind the white accessible symbol shall be painted blue. The markings outlining the space and the diagonals within the access aisle of the space shall be of yellow paint.
 (5) Pavement slopes across accessible parking stalls and adjoining access aisles shall be maximum 2%.

L. TRAFFIC CONTROL SIGNS
 (1) Traffic control signs shall be provided as indicated on the Plans. All signs shall conform to applicable size, material, and installation requirements of the Illinois Manual of Uniform Traffic Control Devices and IDOT Specifications Section 720. Signposts shall be in accordance to IDOT Standards 720011 and 729001 and IDOT Specifications Section 729.

6. SOIL EROSION / SEDIMENT CONTROL AND SITE RESTORATION MEASURES

A. GENERAL
 (1) Contractor shall take suitable and sufficient measures to control soil erosion and sedimentation due to construction and site development activities. These measures shall be in substantial conformance with the principles, practices, and standards described in the Illinois Environmental Protection Agency (IEPA) publication "Illinois Urban Manual."
 (2) Specific erosion/sediment control and restoration measures shall be as indicated on the Plans, as stated in these Project Technical Specifications, and as described in the "Storm Water Pollution Prevention Plan" (SWPPP, if required) prepared for the Project.
 (3) If disturbance exceeds 1 acre and a SWPPP has been prepared for the site, construction and site development work shall comply with the requirements and procedures of the NPDES (National Pollution Discharge Elimination System) Permit No. ILR10, issued by the IEPA for storm water discharge from construction site activities.
 (4) Site clearing and excavation shall be proceed until a phased program for performing all required construction and restoration activities is prepared by Contractor and approved by Engineer. The purpose of this program is to control erosion and sediment problems by minimizing the extent of areas subject to erosion during construction and establishing permanent ground covers as soon as possible. The program shall include preparation of site plans indicating planned sequence and extent of specific construction and restoration areas.
 (5) Contractor responsibilities shall include the maintenance and repair of all seeded, sodded, and planted surfaces until all specified vegetative covers within the project area are suitably established and erosion potential has ceased.
 (6) Construction dewatering operations shall be designed and operated so that water discharged from the project site will meet State of Illinois water quality standards, as set forth in Title 35, Subtitle C, Chapter I, Part 302, Subpart B, Illinois Administrative Code.
 (7) Installation and maintenance of all required erosion/sediment control and restoration measures shall be subject to inspection by the Governing Agency. Deficient conditions shall be corrected when required by the Governing Agency.

B. STABILIZATION PRACTICES
 (1) Contractor shall limit removal of existing vegetated ground covers only to areas absolutely required to perform the project work. Structural sediment barriers shall be installed at the construction limits of the site as indicated on the Plans. Vegetation within areas that are protected by barrier fencing on the Plans shall not be disturbed during construction.
 (2) Exposed soil surfaces shall be stabilized with vegetation and/or protective mulches or blankets. If conditions prevent effective use or placement of such measures, then the installation of structural controls such as sediment barrier fencing and sediment traps will be required.
 (3) Surface stabilization measures shall be initiated immediately after earthwork operations have permanently ceased or have temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization of disturbed areas must be initiated within 1 working day of permanent or temporary cessation of earth disturbing activities and shall be completed as soon as possible but not later than 14 days from the initiation of stabilization work in an area.
 (4) If construction activity is anticipated to temporarily halt for a period of less than 14 calendar days, then surface stabilization measures do not have to be initiated on that portion of the site as long as the site conforms to the erosion and sediment control requirements of the Plans, SWPPP, and ILR10 permit. Where the initiation of surface stabilization measures by the specified time after construction activity temporarily or permanently ceases is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
 (5) Temporary seeding shall be employed when necessary due to seasonal limitations or temporary work stoppages. When seasonal weather conditions prevent seeding, sodding, or planting operations, sloped surfaces shall be blanketed or mulched with suitable material as a means of temporary erosion protection.
 (6) Areas with permanent vegetative cover seeding shall be protected by applied mulch or erosion control blankets.

C. SEDIMENT BARRIERS
 (1) Temporary sediment barriers shall be installed where indicated on the Plans and maintained until soil surfaces have been stabilized with grass or other types of permanent cover. Such barriers shall be silt fences, compost filter socks, coir fiber logs, or other devices as indicated on the Plans.
 (2) Work area perimeter temporary sediment barriers shall be installed prior to the start of site disturbance and earthwork operations.
 (3) Storm sewer systems shall be installed as soon as earthwork operations permit. Drainage structures shall be graded to a subgrade level 12 inches below the structure rim to create temporary sediment traps unless otherwise indicated on the Plans.
 (4) Geotextile filter fabric sediment barriers shall be installed over casting grates of drainage structures that receive surface runoff. Silt fence or compost filter sock barriers shall be placed around drainage structures where the use of filter fabric barriers over the grate is ineffective or not feasible and where silt fences or filter socks are indicated on the Plans. Structures requiring sediment barriers, and the types of barriers to be provided, shall be as indicated on the Plans.
 (5) All sediment barriers shall be replaced or cleaned as necessary during construction when they become clogged or ineffective. All sediment traps shall be cleaned periodically during construction to allow them to operate effectively.

D. CONSTRUCTION INGRESS-EGRESS
 (1) Construction ingress-egress shall be limited to defined paved driveway connections to adjacent public roadways or where indicated on the Plans. Construction exits shall be cleaned daily, as needed to prevent the spread of mud or debris on the public road pavement. Mud and debris shall be cleared from public roads whenever it occurs and as required by the Public Roadway Authority.
 (2) Private roadways, driveways, parking lots, etc., used by construction vehicles and equipment shall be cleaned of mud and debris daily as needed to keep the pavements clean of such materials.
 (3) Temporary aggregate pavements for ingress-egress of construction vehicles shall be installed where indicated on the Plans. These pavements shall be maintained and repaired by Contractor as necessary to enable use by vehicles during the entire construction project.
 (4) Temporary pavement thickness, aggregate gradation, and geotextile fabric underlayment to be provided shall be as indicated on the Plans.

(5) The upper 6 inches of temporary aggregate access pavements shall be removed upon completion of construction activities and replaced with 6 inches of topsoil, graded to match the adjacent topography, and restored in accordance with the Plans.

E. WATER DIVERSION AND DEWATERING
 (1) Methods for diverting water flow, controlling groundwater, and removing stormwater from work sites shall include erosion and sediment control measures as necessary to prevent erosion at pump discharge locations and to minimize the discharge of settleable solids.
 (2) Stone or concrete block riprap protection, or other filtering measures, shall be provided at discharge locations when deemed necessary by Engineer.
 (3) Sediment traps or water removal sump pits shall be provided when required by Engineer.

F. DUST CONTROL
 (1) When dust blowing from construction sites may become a traffic hazard or a danger to the health or comfort of persons downwind, it shall be controlled either permanently or temporarily depending upon the state of development of the site. Dust control measures shall be taken when required by Governing Agency or directed by Engineer.
 (2) Dust problems from active construction areas shall be kept under control by means of watering dry surfaces and/or the application of calcium chloride. Application and repetition rates shall be as necessary for effective control.
 (3) When dust problems occur from disturbed areas, watering and/or calcium chloride are not effective, and weather conditions prevent effective erosion control seeding, such areas shall be stabilized by the application of chemical tackifiers such as "MARLOC" (Reclamcore Co.) or "Soil Seal" (Soil Seal Corp.). Application rates and procedures shall be in accordance with manufacturer's recommendations.
 (4) In the event of severe dust problems, the Governing Agency may stop such dust-producing activities until the problem is resolved.

G. SOIL STOCKPILES
 (1) Soil stockpiles shall be located to prevent sediment runoff into watercourses and drainage systems, or onto adjacent roadways and properties, and, if shown, shall be placed where indicated on the Plans. Stormwater runoff from soil stockpiles shall include erosion control devices as necessary to prevent erosion or sedimentation.
 (2) Soil stockpiles to remain in place more than 15 days shall be surrounded with a sediment barrier fence unless runoff from the stockpile area drains directly to a constructed sediment trap.
 (3) Soil stockpiles that will remain in place longer than 60 days shall be stabilized with temporary erosion control seeding (seed and mulch) within 15 days after construction of the stockpile.

H. UNVEGETATED AREAS
 (1) Unvegetated areas expected to remain unpaved or unrestored for longer than 60 days shall be stabilized with temporary erosion control seeding and mulching within 15 days after earthwork operations have ceased.
 (2) If unvegetated areas are to remain unpaved or unrestored for less than 60 days, sediment barrier fences or excavated sediment traps shall be installed if Engineer determines that sediment runoff will affect adjacent areas.
 (3) Unvegetated steep slopes shall be protected by hydromulching the exposed ground with a Bonded Fiber Matrix, Stabilized Fiber Matrix, or Flexible Growth Medium product (applied at rates recommended by the product manufacturer for the site conditions) when such protection is indicated on the Plans or required by Engineer. Other unvegetated steep slope protection, if required, shall be as indicated on the Plans.

I. TOPSOIL PLACEMENT AND VEGETATIVE COVER
 (1) Weather conditions permitting, topsoil shall be placed and graded within each defined construction area as soon as practical upon completion of cut and fill operations within that area.
 (2) Seeding, planting and erosion protection operations to establish permanent vegetative ground cover shall be performed within 1 day after topsoil placement, whenever weather conditions are adequate for such work.
 (3) Temporary erosion control measures shall remain in place until upland areas are permanently vegetated where a minimum of 70% of every square yard seeded is covered with a uniform stand of vegetation in a live, healthy condition and erosion potential no longer exists.

J. DRAINAGE OUTLETS AND OVERFLOWS
 (1) Erosion protection (stone riprap, concrete block mats, or other specified method) shall be provided at drainage pipe outlets and stormwater basin overflows immediately following installation of the outlet/overflow structures.

K. DRAINAGE CHANNELS AND SWALES
 (1) Drainage channel and swales shall be stabilized and protected with the installation of aggregate trench checks, a cellular confinement system, seeding, and/or turf reinforcement mat where and as indicated on the Plans.

L. EROSION CONTROL SEEDING AND MULCHING
 (1) Areas which may not be at final grade but will remain undisturbed for longer than 60 days (including soil stockpile areas) shall be seeded and/or mulched, as required by Engineer, within 15 days of stoppage of construction activities within the area.
 (2) Seed mixture to be used for temporary erosion control seeding of excavated, filled, graded, or otherwise disturbed areas shall be IDOT Class 7 - 114 lbs./acre.
 (3) Seed mixtures should be applied mechanically so that the seeds are planted at a depth of 1/4 to 1/2 inch. If the seed is broadcast or hydroseeded, secondary raking or harrowing is required.
 (4) Seeded areas shall be protected with a wood / cellulose fiber mulch containing a pre-blended chemical tackifier. Mulch application rate shall be 2,000 lbs. per acre (minimum). Tackifier rate shall be as recommended by the product manufacturer.
 (5) When indicated on the Plans or required by Engineer, seeded slopes shall be protected by hydromulching the areas with a Bonded Fiber Matrix, Stabilized Fiber Matrix or Flexible Growth Medium product applied at a rate recommended by the product manufacturer for the site conditions. The type of product to be used shall be as indicated on the Plans or determined by Engineer. Other slope protection, if required, shall be as indicated on the Plans.
 (6) When seasonal weather conditions or construction operations prevent seeding, sodding, or planting operations for a prolonged period (as determined by Engineer), exposed soil slopes shall be protected by hydromulching the areas with a Bonded Fiber Matrix, Stabilized Fiber Matrix or Flexible Growth Medium product applied at a rate recommended by the product manufacturer for the site conditions. The type of product to be used shall be as determined by Engineer.

M. PERMANENT VEGETATIVE COVERS
 (1) Vegetative ground covers shall be provided, installed, and protected in accordance with the Plans.
 (2) Vegetative areas (other than lawns) damaged by construction activities, but not within the Project disturbed limits, shall be seeded with IDOT Class 1B Seed Mixture (200 lbs./acre); unless a different type of seed mixture is indicated on the Plans to match the original conditions. These seeded areas shall be protected with a wood / cellulose fiber mulch (2,000 lbs./acre) containing a pre-blended chemical tackifier.
 (3) Lawn areas damaged by construction activities shall be restored with turf grass sod to match original conditions.

N. EROSION CONTROL BLANKETS
 (1) Seeded areas shall be covered with erosion control blankets where indicated on the Plans and where specifically required by Engineer. These blankets shall be placed within 24 hours of seeding.
 (2) Erosion control blankets shall be of one or more of the following types and shall be as specified on the Plans or in these Project Technical Specifications. Installation shall be in accordance with manufacturer recommendations and requirements.
 Type 1: Knitted straw fiber blanket with attached photodegradable plastic top and bottom nets: North American Green S150 or equivalent.
 Type 2: Mat of wood fiber material with attached photodegradable plastic top and bottom nets: American Excelsior Company Curlex II or equivalent.
 Type 3: Knitted straw and coconut fiber blanket with a UV stabilized polypropylene top net and a photodegradable bottom net: North American Green S150 or equivalent.
 Type 4: Knitted coconut fiber blanket with a turf reinforcement mat of UV stabilized polypropylene material and top and bottom UV stabilized polypropylene nets: North American Green C350 or equivalent.
 (3) Contractor shall be responsible for maintaining the blankets in place until a satisfactory stand of vegetation is established.

O. PERMANENT TURF REINFORCEMENT MATS
 (1) As a means of permanent erosion protection, specific seeded areas shall be covered with turf reinforcement mats (polypropylene fiber matrix product) where indicated on the Plans and where required by Engineer. These mats shall be placed within 24 hours of seeding.
 (2) Turf reinforcement mats shall be of one or more types (with or without netting and straw / coconut fiber blanket layers) as specified on the Plans. Installation shall be in accordance with manufacturer recommendations and requirements.
 (3) Contractor shall be responsible for maintaining the mats in place until a satisfactory stand of vegetation is established.

P. SODDING
 (1) Grass areas removed or damaged by construction activities shall be restored with sod and maintained until the sod

is knitted to the soil. Disturbed grass areas shall be sodded except where other measures are indicated on the Plans or required by Engineer.
 (2) Sodding (including triflora) shall be in accordance with Section 252 of the IDOT Standard Specifications, as applicable to this project and as specified herein. Sod material shall be in accordance with Article 1081.03. It is specifically noted that sod grown on soil high in organic material such as peat will not be acceptable.
 (3) After required topsoil has been placed and graded, the areas to be sodded shall be thoroughly tilled to a depth of at least 3 inches by disking, harrowing, or other approved methods until the condition of the soil is acceptable to Engineer. If as a result of a rain, a crust is formed over the prepared surface, the surface shall again be placed in a suitable condition for placing sod.
 (4) All soil surfaces shall be moist when the sod is placed. When directed by Engineer, Contractor shall be required to apply water to dry soil surfaces at a minimum rate of one gallon per square yard immediately prior to placing the sod.
 (5) Fertilizer shall be applied uniformly at a rate of 90 pounds of Nitrogen (N), 54 pounds of available Phosphoric (P2O5), and 36 pounds of Soluble Potash (K2O) per acre; and shall be incorporated into the soil to a depth of at least 3 inches by disking, harrowing, or other approved methods acceptable to Engineer. The incorporation of fertilizer may be a part of the tillage operation specified above.
 (6) Contractor shall have complete responsibility for watering sodded areas (number, schedule, and rates of application) as necessary to prevent death or damage of sod material due to lack of water during the time period between sod placement and when the sod becomes knitted to the soil and is growing in place.
 (7) If Contractor does not water the sod

CITY OF NAPERVILLE - DEPARTMENT OF PUBLIC UTILITIES WATER/WASTEWATER GENERAL NOTES	
GENERAL NOTES	
a. New water main valves, including pressure tap valves, adjacent to an existing water main, and existing water main valves shall only be operated by the City of Naperville, Department of Public Utilities CEE/CM Division personnel with 48-hour notice (Monday-Friday). Contact Naperville TED Business Group at 630-420-6082 for scheduling.	
b. Any existing utility structures requiring adjustment or reconstruction shall be completed by the contractor to the satisfaction of the utility owner. Adjustments and/or reconstructions not called for on the plans shall be considered incidental to the contract. No more than a total of 12 inches of adjusting rings and/or 2 adjusting rings shall be allowed. All structure frames shall be flush with final grade.	
c. Trees shall be installed a minimum of five (5) feet horizontally from underground electrical feeders, sanitary sewers, sanitary services, water mains, and water services. Trees shall be installed a minimum of ten (10) feet horizontally from utility structures and appurtenances, including, but not limited to, manholes, valve vaults, valve boxes and fire hydrants. No trees, shrubs or obstacles shall be allowed 10' in front of, 5' on the sides, and 7' to the rear of the electrical transformer.	
d. All retaining glands when required to restrain valves, fittings, hydrants, and pipe joints shall be mechanical joint wedge action type MEGALUG 1100 Series as manufactured by EBBA Iron, Inc. or UNI-FLANGE BLOCKBUSTER 1400 SERIES as manufactured by Ford Meter Box Co. and shall be used for ductile iron pipe conforming to ANSI/AWWA C151/A21.51, for nominal pipe sizes 3" through 48".	
e. Existing ductile iron systems for restraining push-on pipe shall be MEGALUG SERIES 1100HD or FORD SERIES 1390.	
f. Existing ductile iron systems requiring restraint shall be MEGALUG SERIES 1100SD (split MEGALUG) for mechanical joints.	
g. Ductile iron water main to be Class 52. All ductile iron pipe is to be encased in polyethylene film Polyethylene encasement to be installed in accordance with ANSI/AWWA C105/A21.5-05.	
h. A set of as-built record drawing shall be given to the City of Naperville upon completion of improvements showing the elevation and location (tied to two points) of all new and existing structures including fire hydrants, valve boxes and vaults, linestop sleeves, water service corporation stops, water main fittings/bends, manholes, sanitary service wyes (measured from downstream manhole), and abandoned water or sanitary service lines. All elevations should be referenced to the same benchmark datum as the original design plans. Horizontal ties shall be referenced to lot lines, back of curbs, or property corners.	
i. All sanitary sewer piping shall be PVC pipe meeting the requirements of ASTM D-2241 with joints conforming to ASTM D-3139. All sanitary sewer fittings shall be PVC meeting the following requirements: 4" to 12" shall be Injection Molded Fittings meeting ASTM D-2241. Greater than 12" shall be Fabricated Fittings meeting ASTM D-2241 or C905. Minimum pressure rating shall be 150 psi.	
j. The valves less than 16" shall be standard pattern, gate valves and shall have the name or mark of the manufacturer, size and working pressure plainly cast in raised letters on the valve body. Valves may be approved from one of the following manufacturers: American, Clow, Waterous or Kennedy.	
k. Stainless steel nuts, bolts/T-bolts, and washers, Type 304 or better, will be required on all water main installations. This would apply to hydrants, tapping sleeves, valves, fittings/restrains, and other appurtenances buried or in valve vaults. Mechanical joints and restraint glands require 304 stainless steel T-bolts. An anti-seize compound shall be factory applied to nuts or bolts - any damage to this coating shall be repair with field applied approved anti-seize compound that is a molybdenum-base lubricant, Bostik Never-Seze or approved equal.	
l. The contractor shall rotate and/or adjust any existing and/or new hydrant to the satisfaction of the Department of Public Utilities.	
m. Water mains shall be subjected to a hydrostatic/leakage test in accordance with Naperville Standard Specifications. Test pressure shall be no less than 150 psi for a period of 4 hours and not vary by more than 4 psi during the test. The test gauge shall be approved by the City and shall be glycerin or oil filled, with a range of not more than 200 psi and increments not greater than 5 psi, 4" minimum dial size. Water recovery test shall be completed at the end of the testing period to show actual leaking and that the water main did not have too many trapped air in the tested section.	
n. The City of Naperville DPU/WWW does not guarantee that any valve or fitting in the existing water distribution system will hold against a hydrostatic/leakage test. The Contractor is solely responsible for providing an acceptable pressure test which shall include provisions around existing valves and fittings.	
o. Fire hydrant should be bagged "NOT IN SERVICE" until all testing and disinfection has been completed and new water main section is service.	
p. Sanitary sewer and water shall be constructed, tested, and placed into service in accordance with City of Naperville Standard Specification and Specifications for Water and Sewer Main Construction in Illinois, Latest Edition.	
q. All valve boxes, vaults, hydrants, and manholes shall not be covered with construction debris and shall remain accessible to the respective utility company.	
r. Water service line smaller than 3" shall be type K copper. If joints are required due to length of service, then only compression type coupling shall be permitted. No soldered or flared type joints are allowed.	
s. All sanitary manholes shall be tested for leakage by vacuum testing. The manhole frame and adjusting rings shall be in place when testing. Any leaks shall be repaired from exterior of manhole - patching inside of manhole shall not be acceptable. A vacuum of 10" (254 mm) Hg shall be placed on the manhole and the time shall be measured for the vacuum to drop to 9" (229 mm) Hg. The vacuum shall not drop below 9" (229 mm) Hg for the following time periods for each size of manhole:	
i. 48-inch diameter - 60 seconds ii. 60-inch diameter - 75 seconds iii. 72-inch diameter - 90 seconds iv. 84-inch diameter - 105 seconds	
Any manholes that fail the test shall be sealed and re-tested until acceptable.	
t. The contractor shall provide internal televising inspection of all installed sanitary sewer, laterals, manholes and connections to the public system. Following completion of televising work, the contractor shall submit video recordings on DVD or flash drive along with a comprehensive televising report which will indicate the location, footages and nature of any defects. All defects shall be repaired to the satisfaction of the Water/Wastewater Utility and re-televised.	
u. Contractor work hours are only allowed from 7:00 a.m. to 5:00 p.m., Monday through Saturday. No work shall be permitted on Sundays.	
v. Sanitary pipes with less than 4 feet or more than 25 feet of cover shall be constructed of ductile iron piping (Class 50, minimum) and encased in polypropylene.	
w. All excavations more than 20 feet deep must be protected by a system designed by a registered professional engineer.	
x. Contractor shall maintain 2' minimum clearance between existing utilities and new foundations and underground facilities. In areas where foundations and underground facilities are proposed adjacent to existing utilities, the contractor shall not hole by vacuum excavation or hand excavation to locate the existing utility to verify minimum clearance requirement.	
y. Fences shall be installed a minimum of 5 feet from any water or sanitary mains when running parallel with them. Where fences are installed crossing water or sanitary mains, the posts shall be located to have the main between them.	
z. All brass components shall be certified to be lead free in compliance with NSF 61 and NSF 372 and identified with applicable markings.	
OTHER NOTES:	
A. Manholes shall be furnished with a self-sealing frame and solid cover (Neenah Foundry R-1772-CVH, East Jordan Iron Works 1022-3, or equal approved by the City Engineer) with the word "Sanitary" imprinted on the cover in raised letters (see Standard Detail SAN.3). Frames and lids shall meet or exceed AASHTO H-20 loading specifications.	
B. Both the manhole frame and cover shall have machined horizontal and vertical bearing surfaces. Inverted manhole frames are not allowed.	
C. Pick holes shall not create openings in the manhole cover.	
D. Bolt-down frames and covers shall be Neenah Foundry R-1916-F1, East Jordan Iron Works 1040 ZPT or equal approved by the City Engineer. Frames are to be bolted to cone. Bolt-down frames shall be used where indicated on the plans.	
E. Manhole frames shall be adjusted to proper grade using reinforced, precast concrete or fiberized rings. Brick or concrete blocks will not be allowed. Fiberized adjusting rings shall be required when frame will be with a roadway area. Final grade adjustment for manholes within the roadway area shall be in accordance with Sections 602 and 605 of Standard Specifications for Road and Bridge Construction, prepared by the Illinois Department of Transportation, latest edition.	
F. All manhole frames and adjusting rings shall be securely sealed to the cone section or top barrel section of the manhole using resilient, flexible, non-hardening, preformed bituminous mastic material, Conseal 102 B or approved equal. The mastic shall be applied in such a manner that no surface water or ground water inflow can enter the manhole through gaps between the top barrel section or cone section and the first adjusting ring, between adjusting rings, or between the last adjusting ring and the manhole frame. Up to 12 inches (300 mm) of adjusting rings may be installed on a given manhole. No more than one 2-inch (50 mm) adjusting ring, and no more than two adjusting rings in total shall be used.	
G. A continuous layer of non-hardening, preformed bituminous mastic material, Conseal 102 B or approved equal shall be applied to each manhole barrel cone and top section to provide a watertight seal.	
H. All brass components shall be certified to be lead free in compliance with NSF 61 and NSF 372 and identified with applicable markings.	
I. The sanitary force main shall be tested a minimum of one (1) hour at 1.5 times the shut off head of the pump, 2.5 times the operating pressure, or 20 psi, whichever is greatest. Allowable leakage shall be in accordance with section 41-2.14C of the Standard Specifications for Water and Sewer Construction.	

TRANSPORTATION, ENGINEERING AND DEVELOPMENT BUSINESS GROUP STANDARD
CONSTRUCTION PLAN NOTES FOR DEVELOPMENT PROJECTS

GENERAL NOTES

1. THE OWNER OR HIS/HER/THEIR REPRESENTATIVE IS RESPONSIBLE TO OBTAIN ANY AND ALL PERMITS REQUIRED BY APPLICABLE GOVERNMENTAL AGENCIES.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF NAPERVILLE DESIGN MANUAL AND STANDARD SPECIFICATIONS (CURRENT EDITION) AND WITH THE ILLINOIS DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (CURRENT EDITION).
3. ALL CONTRACTORS DOING WORK IN THE PUBLIC RIGHT-OF-WAY MUST BE LICENSED (WHEN APPLICABLE) TO MAKE PUBLIC IMPROVEMENTS WITHIN THE NAPERVILLE CORPORATE LIMITS.
4. THE CONTRACTOR/DEVELOPER ASSUMES ALL RESPONSIBILITY AND LIABILITY FOR ANY ACTION RESULTING FROM THEIR WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
5. THE CONTRACTOR/DEVELOPER SHALL INDEMNIFY AND HOLD HARMLESS THE CITY OF NAPERVILLE.
6. PRIOR TO COMMENCEMENT OF ANY OFF-SITE CONSTRUCTION, THE CONTRACTOR SHALL SECURE WRITTEN AUTHORIZATION THAT ALL OFF-SITE EASEMENTS HAVE BEEN SECURED AND THAT PERMISSION HAS BEEN GRANTED TO ENTER ONTO PRIVATE PROPERTY.
7. THE CONTRACTOR AND THEIR ON-SITE REPRESENTATIVES WILL BE REQUIRED TO ATTEND A PRE-CONSTRUCTION MEETING WITH THE CITY OF NAPERVILLE PRIOR TO ANY WORK BEING STARTED. A PRE-CONSTRUCTION MEETING WILL NOT BE SCHEDULED UNTIL THE PROJECT HAS BEEN APPROVED BY THE CITY OF NAPERVILLE DEVELOPMENT REVIEW TEAM AND THE REQUIRED SURETY HAS BEEN POSTED.
8. A MINIMUM OF 48 HOURS NOTICE SHALL BE GIVEN TO THE CITY OF NAPERVILLE TED BUSINESS GROUP (630-420-6082) PRIOR TO STARTING WORK OR RESTARTING WORK AFTER SOME ABSENCE OF WORK FOR ANY REASON.
9. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ADEQUATELY IDENTIFY AND LOCATE ALL EXISTING UTILITIES PRIOR TO EXCAVATION. BEFORE STARTING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT JULIE FOR THE LOCATION OF ANY AND ALL UTILITIES. THE TOLL-FREE NUMBER IS 800-892-0123. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ANY PRIVATE FACILITIES OR NON-JULIE MEMBER FACILITIES.
10. THE CONTRACTOR CAN SCHEDULE ALL NECESSARY SITE INSPECTIONS WITH THE CITY OF NAPERVILLE BY CALLING (630) 420-6082 BETWEEN THE HOURS OF 8:00AM AND 4:00PM (CLOSED 1:00PM TO 2:00PM DAILY) ON WEEKDAYS WHEN THE CITY IS OPEN FOR BUSINESS. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE THE SITE PERMIT NUMBER FOR THE PROJECT IN ORDER TO SCHEDULE THE INSPECTION(S).
11. RECORD DRAWINGS ARE REQUIRED TO BE SUBMITTED AND APPROVED BY THE CITY OF NAPERVILLE PRIOR TO FINAL OCCUPANCY BEING GRANTED.
12. FINAL ACCEPTANCE OF PUBLIC IMPROVEMENTS SHALL BE GRANTED ONLY AFTER A FINAL INSPECTION HAS BEEN COMPLETED AND HAS REVEALED THAT ALL IMPROVEMENTS HAVE BEEN SATISFACTORILY COMPLETED IN ACCORDANCE WITH THE NAPERVILLE STANDARD SPECIFICATIONS. UTILITIES ARE NOT CONSIDERED ACCEPTED UNTIL THEY ARE FORMALLY ACCEPTED BY THE CITY COUNCIL AS REQUIRED IN ACCORDANCE WITH THE NAPERVILLE MUNICIPAL CODE.

STORM SEWER NOTES (GENERAL)

1. NO CONNECTION TO AN EXISTING PUBLIC STORM SEWER MAY BE MADE WITHOUT PERMISSION OF THE CITY ENGINEER.
2. THE CONTRACTOR SHALL REPAIR ANY EXISTING FIELD DRAINAGE TILE DAMAGED DURING CONSTRUCTION AND PROPERLY REROUTE AND/OR CONNECT SAID TILE TO THE NEAREST STORM SEWER OUTLET. ALL LOCATIONS OF ENCOUNTERED FIELD DRAINAGE TILE SHALL BE PROPERLY INDICATED ON THE CONTRACTOR'S RECORD DRAWINGS.

STORM SEWER NOTES (STORM SEWER WORK IN PLANS)

1. THE FOLLOWING MATERIALS ARE PERMITTED FOR STORM SEWER AND PIPE CULVERTS, WHERE A PARTICULAR MATERIAL IS SPECIFIED IN THE PLANS OR SPECIAL PROVISIONS, NO OTHER KIND OF MATERIAL WILL BE PERMITTED:

 - REINFORCED CONCRETE PIPE (RCP) - REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM DESIGNATION C 76, CLASSES I, II, III, IV OR V. BITUMINOUS JOINTS SHALL CONFORM TO ASTM DESIGNATIONS C 14 OR C 76 AS MAY BE APPLICABLE. BITUMINOUS MATERIAL SHALL CONSIST OF A HOMOGENEOUS BLEND OF BITUMEN, INERT FILLER, AND SUITABLE SOLVENT APPROVED BY THE CITY ENGINEER. RUBBER GASKET JOINTS SHALL CONFORM TO ASTM C 433. REINFORCED CONCRETE PIPE SHALL ALSO BE PERMITTED AS ROUND, ELLIPTICAL, OR BOX SHAPED OR AS REINFORCED CONCRETE ARCH CULVERTS.
 - NON-REINFORCED CONCRETE PIPE - NON-REINFORCED CONCRETE PIPE SHALL BE ALLOWED FOR PIPES WITH A 10 INCH OR SMALLER DIAMETER. NON-REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM DESIGNATION C 14 OR C 76 AS MAY BE APPLICABLE. BITUMINOUS JOINTS SHALL CONFORM TO ASTM DESIGNATIONS C 14 OR C 76 AS MAY BE APPLICABLE. BITUMINOUS MATERIAL SHALL CONSIST OF A HOMOGENEOUS BLEND OF BITUMEN, INERT FILLER, AND SUITABLE SOLVENT APPROVED BY THE CITY ENGINEER. RUBBER GASKET JOINTS SHALL CONFORM TO ASTM C 443.
 - DUCTILE IRON PIPE (DIP) - DUCTILE IRON PIPE SHALL CONFORM TO ANSI A 21.51 (AWWA C-151), CLASS THICKNESS DESIGNED FOR ANSI A 21.50 (AWWA C-150), TAR (SEAL) COATED AND CEMENT LINED PER ANSI A 21.4 (AWWA C-104), WITH MECHANICAL OR RUBBER RING (SLIP SEAL OR PUSH ON) JOINTS. ALL DUCTILE IRON PIPE SHALL BE WRAPPED WITH POLYETHYLENE.
 - POLYVINYL CHLORIDE PIPE (PVC) - POLYVINYL CHLORIDE (PVC) PIPE SHALL CONFORM TO ASTM D 3034, TYPE PS, THE MINIMUM STANDARD DIMENSION RATIO (SDR) SHALL BE 26. THE PIPE SHALL BE MADE OF PVC PLASTIC HAVING A MINIMUM CELL CLASSIFICATION OF 12454-C, AND SHALL HAVE A MINIMUM PIPE STIFFNESS OF FORTY-SIX (46) LBS. PER INCH (317 KPA). JOINTS FOR PVC PIPE SHALL BE FLEXIBLE ELASTOMETRIC SEALS PER ASTM D 3212.
 - HIGH DENSITY POLYETHYLENE PIPE (HDPE) - HIGH-DENSITY POLYETHYLENE (HDPE) PIPE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 252 AND M 294. PIPE AND FITTINGS SHALL BE MADE FROM VIRGIN PE COMPOUNDS WHICH CONFORM TO THE REQUIREMENTS OF CELL CLASS 324420C AS DEFINED AND DESCRIBED IN ASTM D 3350. RUBBER GASKET JOINTS SHALL BE USED.
 - FULLY GALVANIZED CORRUGATED STEEL PIPE - FULLY GALVANIZED CORRUGATED STEEL PIPE MAY BE USED FOR RESIDENTIAL DRIVEWAY CROSSINGS ONLY WHEN A DITCH SECTION IS PRESENT. THE MINIMUM CULVERT SIZE IS 12" DIAMETER.

EROSION CONTROL AND DRAINAGE NOTES (GENERAL)

 1. THE CONTRACTOR SHALL MAINTAIN PROPER DRAINAGE AT ALL TIMES DURING THE COURSE OF CONSTRUCTION AND PREVENT STORM WATER FROM RUNNING INTO OR STANDING IN EXCAVATED AREAS.
 2. DURING EXTENDED DRY PERIODS, THE CONSTRUCTION AREA(S) MAY NEED TO BE WATERED DOWN TO PREVENT THE BLOWING OF SOIL FROM THE SITE.
 3. DURING CONSTRUCTION, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE UTILIZED TO MINIMIZE THE TRACKING OF DIRT ONTO THE PUBLIC STREETS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO KEEP PUBLIC STREET PAVEMENT CLEAN OF DIRT AND DEBRIS. ANY DIRT THAT IS TRACKED ONTO THE PUBLIC STREETS SHALL BE REMOVED THE SAME DAY. IF THE AMOUNT TRACKED ON THE PUBLIC STREET IS EXCESSIVE, CLEANING MAY BE REQUIRED MORE FREQUENTLY.

EROSION CONTROL AND DRAINAGE NOTES (PROJECT SPECIFIC)

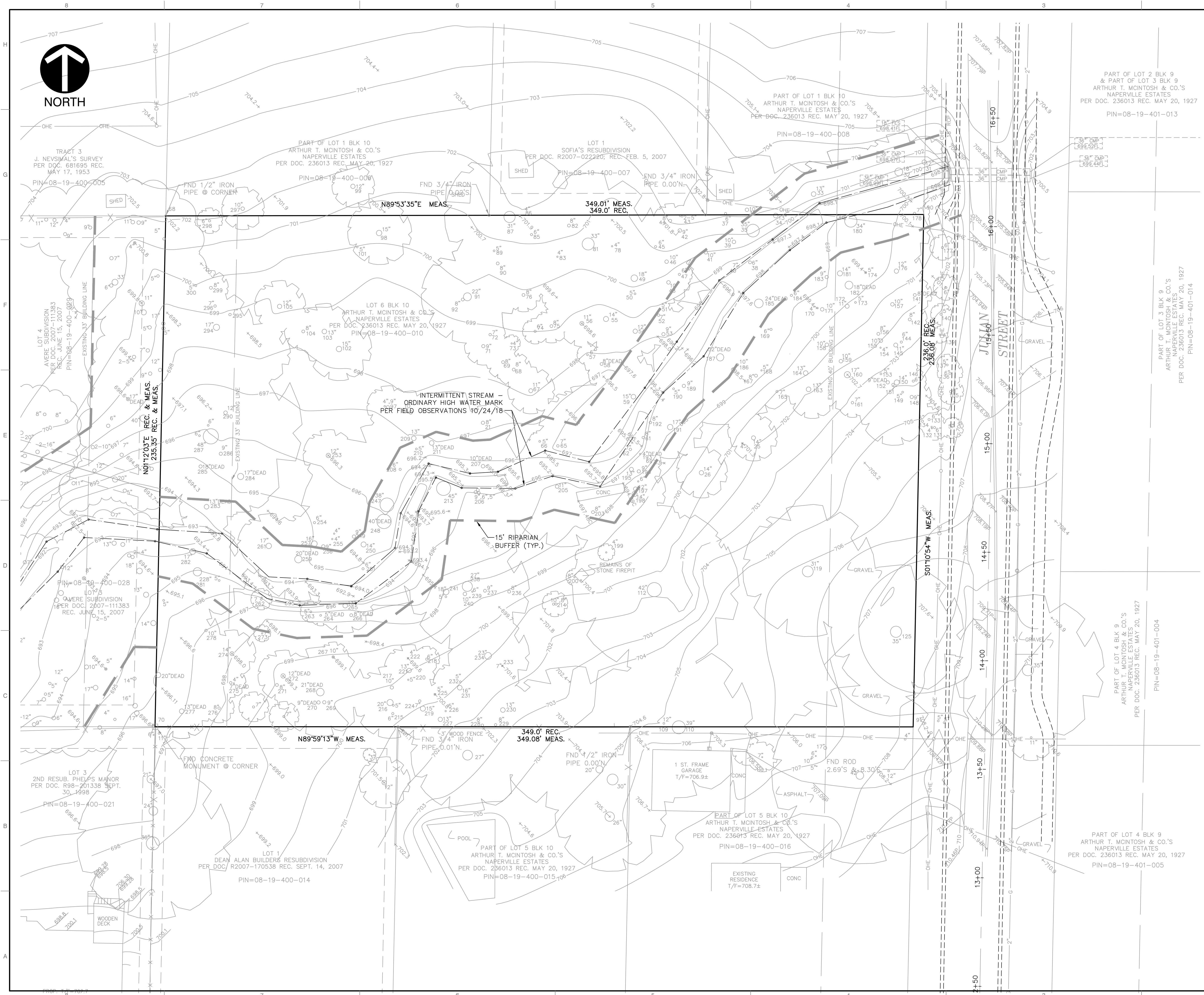
 1. ALL EROSION CONTROL MEASURES SHALL BE PROPERLY INSTALLED, AS PERMITTED, PRIOR TO ANY LAND DISTURBANCE ACTIVITIES. ALL EROSION CONTROL SHALL BE MAINTAINED UNTIL TURF IS ESTABLISHED.
 2. ACCEPTABLE PERIMETER EROSION CONTROL INCLUDES SILT FENCE, SILT WORM AND ANY OTHER APPLICATION APPROVED BY THE CITY ENGINEER.
 3. ALL OPEN GRATE STRUCTURES SHALL HAVE EROSION CONTROL PROTECTION IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLANS. INLET BASKETS ARE THE PREFERRED METHOD; STRAW BALES SHALL NOT BE USED.
 4. STOCKPILES NOT BEING DISTURBED FOR MORE THAN 14 DAYS SHALL BE SEEDED.
 5. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY, AFTER ANY 0.5 INCH RAINFALL, OR MORE FREQUENTLY AS NECESSARY TO MAINTAIN THEIR FUNCTION.
 6. IT IS THE RESPONSIBILITY OF THE OWNER OR HIS DESIGNEE TO INSPECT ALL TEMPORARY EROSION CONTROL MEASURES PER THE REQUIREMENTS OF THE NPDES PERMIT AND CORRECT ANY DEFICIENCIES AS NEEDED.

GEOMETRIC AND PAVING NOTES (GENERAL)

 1. THE DEVELOPER AND CONTRACTOR SHALL HAVE THE RESPONSIBILITY TO ADEQUATELY PROTECT THE PAVEMENT AND PROPERTY, CURB AND GUTTER AND OTHER RIGHT-OF-WAY IMPROVEMENTS, WHETHER NEWLY CONSTRUCTED OR EXISTING, FROM ANY AND ALL DAMAGE. SUFFICIENT MEANS SHALL BE EMPLOYED BY THE CONTRACTOR TO PROTECT AGAINST SUCH DAMAGE TO THE SATISFACTION OF THE CITY ENGINEER.
 2. ANY NEW OR EXISTING IMPROVEMENTS THAT ARE DAMAGED SHALL BE REPAIRED OR REPLACED IN A MANNER THAT IS SATISFACTORY TO THE CITY ENGINEER.
 3. THE CONTRACTOR AND/OR DEVELOPER SHALL SECURE ALL NECESSARY RIGHTS AND PERMISSIONS TO PERFORM ANY WORK ON PRIVATE PROPERTY NOT WITHIN THE OWNERSHIP RIGHTS OF THE DEVELOPER. THE DEVELOPER SHALL BEAR THE SOLE RESPONSIBILITY FOR DAMAGES THAT MAY OCCUR AS A RESULT OF WORK PERFORMED UNDER CONTRACTS THEY INITIATE.
 4. THE CONTRACTOR/DEVELOPER WILL BE RESPONSIBLE FOR BRINGING PAVEMENTS (STREET, CURB AND GUTTER, SIDEWALK, DRIVEWAY) ON THE PROPERTY UP TO CITY STANDARDS INCLUDING ANY REPAIRS TO SUBSTANDARD PAVEMENTS THAT EXISTED PRIOR TO OR OCCURRED DURING CONSTRUCTION.

5. WHEREVER NEW WORK WILL MEET EXISTING CONDITIONS OTHER THAN LAWN AREAS, REGARDLESS OF WHETHER THE NEW OR EXISTING WORK IS ASPHALT OR CONCRETE, THE EXISTING ADJACENT SIDEWALK, DRIVEWAYS, PAVEMENT OR CURB SHALL BE NEATLY SAW CUT. THE SAW CUT SHALL BE IN A NEAT STRAIGHT LINE SUFFICIENT DEEP SO THAT IT RENDERS A SMOOTH VERTICAL FACE TO MATCH TO. IF THE CONTRACTOR IS NOT CAREFUL OR DOES NOT SAW DEEP ENOUGH AND THE CUT LINE BREAKS OUT OR CHIPS TO THE IMPERFECT EDGE, THEN THE EXISTING SIDE MUST BE RE-CUT SQUARE AND DONE OVER UNTIL IT IS CORRECT.

TRAFFIC CONTROL AND PROTECTION NOTES (GENERAL)



PHOTOGRAPHIC EXHIBIT NOTES:

IMPROVEMENTS WITHIN THE JULIAN STREET RIGHT OF WAY
AS SHOWN IN THE "EAST HIGHLANDS SUBDIVISION
IMPROVEMENT PLANS" PREPARED BY ENGINEERING RESOURCE
ASSOCIATES, INC. (ERA), 95% SUBMITTAL. THE PROPOSED
IMPROVEMENTS ARE DEPICTED IN A HEAVY DASH. THE
FOLLOWING MODIFICATIONS HAVE BEEN MADE TO
ACCOMMODATE THE PROPOSED SUBDIVISION:
THE 8-INCH SANITARY SEWER HAS BEEN EXTENDED TO THE
NORTH

THE SEWER DEPTH HAS BEEN INCREASED
SANITARY SERVICE LOCATIONS HAVE BEEN MODIFIED
WATER SERVICE SIZE AND LOCATIONS HAVE BEEN MODIFIED
AN ADDITIONAL FIRE HYDRANT HAS BEEN ADDED TO THE
WEST SIDE OF JULIAN STREET

THE TOPOGRAPHIC INFORMATION DEPICTED ON THE PLANS
ON A LOCAL DATUM. THE FOLLOWING CONVERSIONS CAN
BE USED TO RELATE TO THE FUTURE "EAST HIGHLANDS
SUBDIVISION IMPROVEMENT PLANS" BY ERA AND TO NAVD 88.

CONVERSION FROM LOCAL DATUM TO ERA/NAVD88 = + 0.63'

SEE SHEET C400 FOR DESIGN AND C800 FOR DETAILS

Civil & Environmental Consultants, Inc.
1230 East Diehl Road, Suite 200 - Naperville, IL 60563
630-963-6026 • 877-963-6026

**M-HOUSE DEVELOPMENT
HIDDEN CREEK SUBDIVISION
831 JULIAN STREET
NAPERVILLE, ILLINOIS 60540**

111

TOPOGRAPHIC EXHIBIT	
DATE:	MARCH 20, 2020
DWG SCALE:	1" = 20'
PROJECT NO.:	C100
DRAWN BY:	FWB
CHECKED BY:	TJG
PG NO.: 5 OF 9	

G NO.:
C100

5 OF 9

8	7	6	5	4	3	2	1																																																																																				
<p>Storm Water Pollution Prevention Plan Specifications and General Notes</p> <p>This stormwater pollution prevention plan (SWPPP) has been prepared to comply with the provisions of NPDES ILR10 Construction General Permit (CGP) issued by the Illinois Environmental Protection Agency for stormwater discharges from construction site activities.</p> <p>1. Site Description The following is a description of the construction activity that is the subject of this plan.</p> <p>A. The proposed improvement consists of the construction of 2 single family residential lots. Improvements shown within the Julian street right of way will be constructed by others. The construction site activities for the site improvements will include: topsoil excavation and stockpiling, earth excavation and the placement of embankment materials, installation of storm sewers, sanitary and water services, municipal infrastructure such as telecommunications, gas and electric services, re-spreading of topsoil over all disturbed pervious areas, stabilization of pervious areas with seed and/or other landscaping materials, soil erosion and sedimentation control measures and other activities that may be required to protect adjacent properties and downstream watercourses from damage.</p> <p>B. The expected sequence of activities that will cause significant disturbance / disruption of the site are as follows: site clearing and tree removal; topsoil excavation and stockpiling; earth excavation and placement of earth embankments and restoration of disturbed surfaces. Prior to commencing any other disruption, a stabilized fence, any required down-slope protection and stabilized construction entrance must be installed. Additional soil erosion and sediment control measures shall be installed as construction activity progresses, as noted on the plans.</p> <p>C. The total area of the construction site is approximately 1.82 acres. The total area of the site to be disturbed is estimated to be 1.02 acre.</p> <p>D. The estimated stormwater runoff coefficients are contained in the project design narrative on file with the local agency having jurisdiction over this project. Information regarding soil classifications, estimated runoff and detailed computations for the management of stormwater runoff are contained in the project design narrative, which is incorporated by reference and made a part of this plan.</p> <p>2. Controls The plan addresses various controls that must be implemented for each of the major construction activities described above. For each of the controls described below, the contractor(s) shall be responsible for its implementation. Each contractor has signed this plan acknowledging responsibility for the implementation and on-going maintenance of this plan.</p> <p>A. Soil Erosion and Sediment Controls. 1. Stabilization Practices. Existing vegetation should be preserved as long as possible. Disturbed areas should be stabilized as soon as possible. Stabilization measures shall be implemented on soils as practical in portions of the site where construction activities have temporarily or permanently ceased, but in no case longer than 14 days in areas where construction activity will not resume for 14 days, or more. Where construction activity has stopped, stabilization actions or other conditions preventing implementation, stabilization measures shall be implemented as soon as conditions permit. The following interim and permanent stabilization practices, as a minimum, shall be employed to stabilize disturbed areas of the site: Permanent Seeding; Vegetative Filters; Vegetative Channels and Swales; Stabilized Construction Entrances; Ditch Checks; Barrier Filters; and Silt Fence. 2. Structural Practices. The following structural practices shall be implemented to the extent possible to divert flows from exposed soils, storm flows or otherwise limit runoff and the discharge of pollutants from the exposed areas of the site: Siltation Basins; Storm Sewer Systems; Vegetated Draining Swales; Permanent Seeding. B. Storm Water Management. 1. The following measures will be installed during the construction process to control pollutants in storm water discharges that may occur after construction operations have been completed. The installation of some of these devices may be subject to the provisions of Section 404 of the Clean Water Act. The practices being implemented by this plan are based on the best available technical guidance contained in the IEPA's Standard Specifications for Soil Erosion and Sediment Control, as well as other documents and ordinances listed in the specifications. The storm water pollutant control measures include: Silt Filter Fence; Barrier Filters; Vegetated Draining Swales; Storm Sewer Systems; and Siltation Basins. 2. Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channels, as necessary, to assure a non-eroding velocity in flows from any structure to a watercourse, so that the natural, physical, and biological characteristics and functions of the watercourse are protected. C. Other Controls. 1. Waste Disposal. Solid waste material, including trash, construction debris, excess construction materials, machinery, tools and other items shall be collected and disposed of off-site by the contractor in an approved manner. The contractor is responsible for all permits required for such disposal. On-site burning shall not be permitted. No solid materials, including building materials, shall be discharged into the waters of the state, excepted as authorized by appropriate permits. This plan shall comply with all applicable state and/or local waste disposal, sanitary sewer and/or septic system regulations. 2. Sanitary Waste. Sanitary waste shall be collected from portable units provided by the contractor a minimum of two times per week to avoid overflowing and maintain sanitary conditions around the unit. 3. Petroleum Products. All petroleum products stored on-site shall be stored in approved containers. All fueling sources shall have spill kits immediately available. 4. Concrete Trucks. Concrete trucks shall not be permitted to wash out or discharge surplus concrete or drum wash into the water of the site. Specific areas for this activity shall be designated and shall be provided with adequate siltation basins and other facilities to assure that discharge is contained and cleaned before entering the site storm water system. 5. De-watering. De-watering of excavations and other spaces, using pumps or other means. All discharges of water contaminated with silt or sediment shall be made to a portable or permanent sediment basin to assure that all suspended solids are removed prior to flows leaving the construction site.</p>		<p>D. Approved State or Local Plans. The management practices, controls and other provisions of this plan shall be protective of the requirements contained in the IEPA's Standard Specifications for Soil Erosion and Sediment Control, current edition, Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control, and any governing local agency ordinances. Requirements specified in sediment and erosion control plans, site permits, or stormwater management site plans or site permits approved by local agencies that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under this permit, incorporated by reference and enforceable under this permit even though they may not be specifically included in the plan.</p> <p>3. Maintenance. The following procedures shall be used to maintain, in good condition, vegetation, erosion and sedimentation control measures, and other protective measures identified in this plan and the standard specifications.</p> <p>A) Stabilized Construction Entrances: The entrance shall be maintained to prevent tracking of sediment onto public streets. Maintenance shall include top-dressing with additional stone, removal and replacement of the top layer of stone, or washing the entrance. Any sediment deposited on public right-of-way shall be removed immediately. Adjacent public streets shall be swept frequently, if not daily, to eliminate dust and sediments.</p> <p>B) Vegetated Construction Entrances: The vegetative growth associated with temporary and permanent seeding, sodding, vegetative channels, vegetative filters, etc. shall be maintained periodically and supplied with adequate water and fertilizer nutrients. If necessary, the vegetative cover shall be removed and re-seeded, as required.</p> <p>C) Sediment Basins and Sediment Traps: Sediments shall be removed when the sediment occupies 40-50% of the original capacity. In no instance shall the sediment be allowed to build up to within one-foot of the outlet elevation. Basins shall be cleaned to restore their original capacity.</p> <p>D) Silt Fence: Any damaged silt fence shall be repaired to meet the original design intent or removed and replaced, as necessary.</p> <p>E) Straw Bale Filter Barriers: Straw Bale Filter Barriers shall be inspected frequently and repaired or replaced, as necessary.</p> <p>F) Barrier Filters: Barrier Filters (geotextile fabric) shall be placed in all open-lid storm structures to prevent silt and other construction materials from entering the storm sewer system. Barrier Filters shall be inspected after each rainfall event and immediately repaired, as necessary.</p> <p>G) Riprap Outlet Protection: Riprap outlet protection shall be implemented after preventing high flows or any scouring beneath or along the edges of the riprap, for any of the riprap material that may have become dislodged. Repairs shall be implemented immediately.</p> <p>H) Estimated construction schedule for lot 1 is as follows:</p> <table border="1"> <tr> <td>Topsoil stripping</td> <td>SUMMER 2020</td> </tr> <tr> <td>Grading</td> <td>SUMMER 2020</td> </tr> <tr> <td>Soil</td> <td>SPRING 2021</td> </tr> <tr> <td>Landscaping</td> <td>SPRING 2021</td> </tr> </table> <p>I. PROCEDURES 1. Storm sewer outfalls. Install Inlet Boxes. Grade the area within four (4) feet of the structure one-foot lower to serve as a sedimentation basin during construction. Stake straw bales. Install Silt Filter Fence. Clean as necessary.</p> <p>2. Open lid storm structures in grass areas. 1. Grade the area within four (4) feet radius around structures one (1) foot below rim to serve as sedimentation basins during construction. Stake straw bales around the rims. 2. Place a section of geotextile material beneath the lid in order to reduce the potential for debris and other material from entering the storm system. 3. Install Silt Filter Fence along all the property lines where site drains towards adjacent property of right-of-ways.</p> <p>3. Provide minimum 6" topsoil and seed areas disturbed during construction or landscape in accordance with landscaping plan.</p>		Topsoil stripping	SUMMER 2020	Grading	SUMMER 2020	Soil	SPRING 2021	Landscaping	SPRING 2021	<p>RIP-RAP DETAIL AT PIPE OUTLETS No Well-defined Channel</p> <p>STABILIZATION TYPE</p> <table border="1"> <thead> <tr> <th>JAN</th> <th>FEB</th> <th>MAR</th> <th>APR</th> <th>MAY</th> <th>JUNE</th> <th>JULY</th> <th>AUG</th> <th>SEP</th> <th>OCT</th> <th>NOV</th> <th>DEC</th> </tr> </thead> <tbody> <tr> <td>PERMANENT SEEDING</td> <td></td> </tr> <tr> <td>DORMANT SEEDING</td> <td></td> </tr> <tr> <td>TEMPORARY SEEDING</td> <td></td> </tr> <tr> <td>SODDING</td> <td></td> </tr> <tr> <td>MULCHING</td> <td></td> </tr> </tbody> </table> <p>A. KENTUCKY BLUEGRASS 90 LBS/AC MIXED WITH PERENNIAL RYEGRASS 30 LBS/AC B. 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