

FINAL ENGINEERING PLANS

M HOUSE CREEK ESTATES

NAPERVILLE, ILLINOIS

LEGEND

PROPOSED	EXISTING	DESCRIPTION
		MANHOLE
		CATCH BASIN
		INLET
		VALVE & VAULT
		VALVE & BOX
		FIRE HYDRANT
		CLEANOUT
		BUFFALO BOX
		STREET LIGHT
		BOLLARD LIGHT
		LIGHT STANDARD
		GROUND FLOOD LIGHT
		UTILITY POLE
		GAS VALVE
		GAS METER
		TELEPHONE MANHOLE
		TELEPHONE PEDESTAL
		ELECTRIC MANHOLE
		ELECTRIC DUCTBANK MANHOLE-G
		ELECTRIC DUCTBANK MANHOLE-E
		ELECTRIC DUCTBANK SWITCHGEAR
		ELECTRIC PEDESTAL
		ELECTRIC METER
		AIR CONDITIONER
		ELECTRIC HAND HOLE
		CABLE TELEVISION PEDESTAL
		ROADWAY/HANDICAP SIGN
		STORM SEWER
		SANITARY SEWER
		WATERMAIN
		FORCEMAIN
		HEADWALL
		END SECTION
		CORRUGATED METAL PIPE
		TRAFFIC SIGNAL INTERCONNECT
		ELECTRIC LINE
		ELECTRIC LINE
		TRAFFIC SIGNAL LINE
		STREET LIGHT CABLING
		OVERHEAD UTILITY LINES
		GAS LINE
		TELEPHONE LINE
		FIBER OPTIC CABLE
		CABLE TELEVISION
		CONTOURS
		FENCE LINE
		GUARDRAIL
		ELEVATIONS
		SIDEWALK
		CURB
		DEPRESSED CURB
		GUTTER FLAG W/REVERSE PITCH
		TRENCH BACKFILL
		STRUCTURE CALLOUT
		FIRE HYDRANT CALLOUT
		PROPOSED ELEVATIONS
		PROPOSED TOP OF FOUNDATION ELEVATION
		PROPOSED LOOK OUT ELEVATION
		PROPOSED GARAGE FLOOR ELEVATION
		TOP OF WALL ELEVATION
		BTM OF WALL ELEVATION
		DIRECTION OF FLOW

ABBREVIATIONS (NOT ALL USED)

REC.	RECORD DATA
MEAS.	MEASURED DATA
DEED	DEEDED DATA
R.	RADIUS
A.	ARC DATA
ROW	RIGHT OF WAY
PL	PROPERTY LINE
CL	CENTERLINE
PU & DE	PUBLIC UTILITY & DRAINAGE EASEMENT
BC	BACK OF CURB
TC	TOP OF CURB
FL	FLOWLINE
EP	EDGE OF PAVEMENT
P	PAVEMENT
EG	EDGE OF GRAVEL
EC	EDGE OF CONCRETE
EB	EDGE OF PAVER BRICK
SW	SIDEWALK
BW	BACK OF WALK
FW	FRONT OF WALK
WW	WINDOW WELL
G	GROUND
TEL	TELEPHONE
E	ELECTRIC
CATV	CABLE TELEVISION
INV	INVERT
TWL	TOP OF WALL
BWL	BOTTOM OF WALL
TF	TOP OF FOUNDATION
LO	LOOK OUT
WO	WALK OUT
GF	GARAGE FLOOR
HWL	HIGH WATER LEVEL
NWL	NORMAL WATER LEVEL
LNA	LIMITS OF NATURAL AREA

	SIZE	DECIDUOUS TREE
	SIZE	CONIFEROUS TREE
	SIZE	TREES TO BE REMOVED
	SIZE	TREES TO BE PROTECTED WITH FENCING
		BUSH/BUSH LINE
		SILT FENCE
		SEDIMENT BASKET/ INLET PROTECTION
		SILT FENCE DITCH CHECK
		OVERLAND FLOOD ROUTE
	(SOIL BORING NUMBER)	SOIL BORING

LINE TYPE LEGEND

PROPOSED	EXISTING	DESCRIPTION
		BOUNDARY
		LOT LINE
		CENTER LINE
		RIGHT OF WAY
		EASEMENT LINE
		BUILDING LINE
		SECTION LINE
		UNDERLYING LOT LINE



SITE MAP

N.T.S.



Know what's below.
Call before you dig.

ILLINOIS LAW REQUIRES ANYONE DIGGING TO CALL JULIE AT 1-800-892-0123 AT LEAST 48 HOURS/TWO WORKING DAYS PRIOR TO THE START OF EXCAVATION AND THE PROJECT MUST BEGIN WITHIN 14 CALENDAR DAYS FROM THE CALL.

PROJECT TEAM

CIVIL ENGINEER & LANDSCAPE ARCHITECT

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
1230 EAST DIEHL ROAD, SUITE 200
NAPERVILLE, ILLINOIS 60563
PH: (630) 963-6026
FX: (630) 963-6027
CONTACT: JIM CANEFF, P.E.
SENIOR PRINCIPAL

OWNER

M-HOUSE DEVELOPMENT
710 EAST OGDEN AVENUE SUITE 530
NAPERVILLE, IL 60563
PH: (630) 570-0008
CONTACT: SCOTT MATHIESON

Sheet List Table

Sheet Number	Sheet Title
C000	COVER SHEET
C001	GENERAL NOTES - 1
C002	GENERAL NOTES - 2
C003	GENERAL NOTES - 3
C100	TOPOGRAPHIC EXHIBIT
C400	GRADING & UTILITY PLAN
C800	DETAILS
C900	STORMWATER POLLUTION PREVENTION PLAN
C901	STORMWATER POLLUTION PREVENTION SPECIFICATIONS AND GENERAL NOTES

REFERENCE BENCHMARKS

- NAPERVILLE MONUMENT #1: BERNSTEN 3D MONUMENT AT THE SOUTHEAST CORNER OF THE INTERSECTION OF CHARLES STREET AND CHESHIRE AVENUE.

ELEVATION= 733.75 (NAVD 88)

PROJECT BENCHMARKS

- CUT CROSS ON THE TOP OF CURB AT MIDPOINT OF THE NORTHWEST CURVE RETURN OF GARTNER AND JULIAN.

(NAVD 88) ELEV.= 710.83

- SET IRON PIPE WITH CAP 3 FEET WEST OF EDGE OF PAVEMENT 68 FEET NORTH OF SOUTH PROPERTY LINE.

(NAVD 88) ELEV.= 708.51

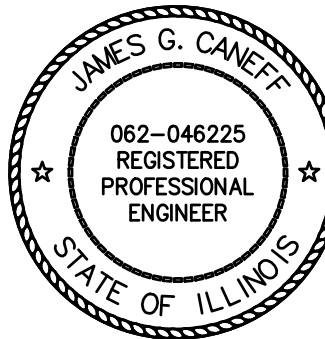
THE TOPOGRAPHIC INFORMATION DEPICTED ON THE PLANS IS ON A LOCAL DATUM. THE FOLLOWING CONVERSIONS CAN BE USED TO RELATE TO THE FUTURE "EAST HIGHLANDS SUBDIVISION IMPROVEMENT PLANS" BY ERA AND TO NAVD 88. CONVERSION FROM LOCAL DATUM TO ERA/NAVD88 = + 0.63'

STATE OF ILLINOIS }
COUNTY OF DUPAGE } SS

I, JAMES G. CANEFF, AN ILLINOIS PROFESSIONAL ENGINEER, HEREBY CERTIFY THAT THESE PLANS HAVE BEEN PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC., ILLINOIS LICENSED PROFESSIONAL DESIGN FIRM NO. 184.004002, LICENSE EXPIRES APRIL 30, 2021, UNDER MY PERSONAL DIRECTION FOR THE EXCLUSIVE USE OF THE CLIENT NOTED BELOW. REPRODUCTION OR USE BY THIRD PARTIES IS STRICTLY PROHIBITED WITHOUT THE WRITTEN PERMISSION OF THE UNDERSIGNED.

GIVEN UNDER MY HAND AND SEAL THIS 11TH DAY OF JUNE, 2020.

James G. Caneff
ILLINOIS LICENSED PROFESSIONAL ENGINEER NO. 46225
REGISTRATION VALID THROUGH NOVEMBER 30, 2021
(NOT VALID WITHOUT ORIGINAL SIGNATURE)



©COPYRIGHT 2020 CIVIL & ENVIRONMENTAL CONSULTANTS, INC. ALL RIGHTS RESERVED.

REVISION RECORD

NO	DATE	DESCRIPTION
1	06/03/20	REVISED PER CITY REVIEW DATED 04/13/20

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

M-HOUSE DEVELOPMENT
M HOUSE CREEK ESTATES
831 SOUTH JULIAN STREET
NAPERVILLE, ILLINOIS 60540

COVER SHEET

DATE:	MARCH 20, 2020	DRAWN BY:	FWB
DWG SCALE:	N/A	CHECKED BY:	TJG
PROJECT NO:	191-272	APPROVED BY:	JGC

DRAWING NO.:

C000

SHEET 1 OF 9

A:\2019\191-2-000\Draw\DOT-Final Engineering\191912-C001-C001-003 General Notes.dwg (GENERAL NOTES 1) 15/06/11/2020 - endtime) - LG: 6/11/2020 6:04 AM

PROJECT TECHNICAL SPECIFICATIONS

I. 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 represents 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 lathe 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 therefor.
- (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.
- (3) If Contractor intends to dispose of generated construction / demolition debris materials or excavated soils at a regulated clean construction / demolition debris (CCDD) 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.

3. 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.

B. 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.

C. 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.

D. EXCAVATION

- (1) Existing earth and fill materials within the project construction limits shall be excavated as necessary to establish the elevation, 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 structure 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 needed 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.

E. 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 or 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 in accordance with ASTM D698.
- (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, GP, GM, SW, SP 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.
- (4) Unsuitable Fill - Soil materials that are not in conformance with the stated criteria for structural fill material shall not be used as structural fill.
- (5) Installed fill layers softened or otherwise damaged by rain, ponded water, or construction activities shall be scarified, dried, and recompacted, 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.

(6) 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 approved equal), 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. Alternate 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 unstable and unsuitable 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.

F. 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 stockpiled 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 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 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 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 Geotechnical Engineer determines 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 adjusted 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 column footings, one in-place density test shall be performed for each footing, of each lift of material placed during each day.

G. MOISTURE CONTROL

- (1) Where the subgrade, or other layer of soil, must be moisture-conditioned before compaction, the top 12 inches of the material shall be scarified or disked and then dried or moistened as required to achieve compaction. Water shall be applied uniformly in a manner that prevents free water from appearing on the surface during, or subsequent to, compaction operations. Material that is too wet to air dry and compact to the specified density shall be removed and replaced.

H. GRADING TOLERANCES

- (1) Surface elevations shall be within the following indicated tolerances.
- (a) Under vehicle, pedestrian, and drainage control pavements, and building floor slabs: -0.08 to +0.04
- (b) Drainage swales and stormwater basins: -0.10 to +0.10
- (c) Embankments and slopes other than (b) above: -0.15 to +0.15
- (2) Unless otherwise noted, grades and contours shown on the Plans are final topsoil and pavement surface elevations. All excavated and filled areas not within the limits of buildings, structures, or pavements shall be graded to 6 inches below the indicated elevations to allow for topsoil placement, unless otherwise indicated on the Plans.

I. RESTORATION

- (1) Previously prepared earth subgrade areas that are damaged by soil erosion or construction activities shall be repaired and graded to design contours and elevations before placement of pavement materials or topsoil.
- (2) Areas not otherwise subject to disturbance that are damaged by movement or storage of construction vehicles, equipment, or materials, or other construction activities such as the discharge of water from the construction site, shall be restored to original conditions.

J. TOPSOIL PLACEMENT

- (1) Topsoil shall be placed on all of the following areas. Minimum topsoil depth shall be 6 inches unless otherwise indicated on the Plans. Topsoil placement shall include grading and shaping to required final contours and elevations.
- (a) All project grass, landscape, or other vegetated areas indicated on the Plans.
- (b) All unpaved offsite areas damaged by installation of project associated utilities or pavements.
- (c) All unpaved offsite areas disturbed by project associated activities.
- (2) Within new wetland areas, topsoil shall be placed in a manner to minimize compaction of the material. Minimum lift thickness shall be 12 inches unless otherwise indicated on the Plans. The placed material shall be disked or tilled to a depth of at least 8 inches. Once the topsoil is placed, no vehicles except the disk/tilling equipment shall be allowed on the material.
- (3) If required or as indicated on the Plans, Contractor shall obtain and provide necessary topsoil material from off-site sources (any stockpiled topsoil on the site shall also be used). The suitability of material supplied by Contractor shall be as defined elsewhere in these Earthwork Specifications. Contractor shall provide the Geotechnical Engineer access to proposed off-site sources to take samples and evaluate the materials.

K. DISPOSAL OF MATERIALS

- (1) Surplus soil materials remaining after completion of fill placement and construction of berms shall be removed from the site and disposed of in legal manner, unless directed by the Owner to stockpile on-site for future use. Stockpile locations shall be as authorized by the Owner.
- (2) Removal and disposal of existing utility pipes and structures, construction debris, or other obstructions which interfere with proposed construction and which are not indicated in the Agreement between Owner and Contractor as a separate pay item shall be considered incidental to the earthwork operations.
- (3) Contractor shall be responsible for finding locations and obtaining approvals for the off-site disposal of demolition and construction debris, rubbish, pavement materials, shrubs, trees, and surplus, unsuitable excavated soil materials. Owner shall be advised, in writing, of the specific locations of all off-site disposal sites.

4. SANITARY SEWERS, STORM DRAINAGE AND WATER SUPPLY SYSTEMS

A. GENERAL

(1) REFERENCE SPECIFICATIONS

- (a) Sanitary sewers, storm drainage, and water supply improvements shall be constructed in accordance with the material, installation and testing requirements of the "Standard Specifications for Water and Sewer Main Construction in Illinois," current edition; except where said requirements are modified by these Project Technical Specifications.
- (b) References to "IDOT" requirements or standards shall mean in conformance to the material, installation, and testing requirements of the current edition of the IDOT Standard Specifications.

(2) UNSUITABLE SOIL CONDITIONS

- (a) When unsuitable soil conditions are encountered under pipes or structures that require the removal of unsuitable materials below the depth of the standard bedding, the Contractor shall replace the material removed with granular material approved by the Geotechnical Engineer. Depth and extent of removal shall be as determined by the Geotechnical Engineer.
- (b) Unless defined otherwise in the Agreement between Owner and Contractor, payment for unsuitable soil removal shall be made at the contract unit price per cubic yard of soil removed and replaced with granular material. Unless defined otherwise in the Agreement between Owner and Contractor, the cost of removing and disposing of the unsuitable material and supplying and placing the granular fill and any dewatering required during these activities shall be considered incidental to the various pay items of the work.

(3) PIPE BEDDING, HAUNCH SUPPORT & INITIAL BACKFILL

- (a) Concrete pipe, clay pipe, ductile iron pipe, cast iron pipe, and other types of pipe classified as rigid shall be placed on a 4-inch layer of compacted granular bedding material. This granular material shall also be placed on each side of the pipe (haunch support) from the top of bedding up to the horizontal midpoint of the pipe. Granular bedding and haunch material shall consist of graded crushed stone 1/4 inch to 3/4 inch in size (IDOT equivalent CA-11), unless otherwise specified on the Plans.
- (b) Thermoplastic pipe (e.g., PVC and HDPE), corrugated metal pipe, and other types of pipe classified as flexible shall be supported with granular bedding, haunching, and initial backfill in accordance with ASTM D2321, except as hereby modified. Class I embedment material (angular graded stone) 1/4 inch to 3/4 inch in size (IDOT equivalent CA-11) shall be used as bedding, haunching, and initial backfill material and initial backfill material shall be installed to 12 inches above the top of the pipe.
- (c) Where a pipe projects from an embankment or natural ground, the last 3 feet of bedding and backfill at the pipe end shall be impervious material compacted in place.
- (d) Unless otherwise stated in the Agreement between Owner and Contractor, the cost of providing and placing granular bedding, haunch support, and initial backfill material shall be included as part of the fixed price or unit prices for sewer / culvert or main construction of the sizes and types specified.

(4) GRANULAR BACKFILL

- (a) Selected granular material shall be used to backfill excavated trenches under all existing and proposed vehicle pavements and sidewalks, trenches with edges closer than 2 feet from edges of existing and proposed vehicle pavements and sidewalks, and trenches with edges specifically indicated on the Plans. Selected granular material for backfilling trenches shall be IDOT Gradation CA-6, unless otherwise indicated.
- (b) Porous (free-draining) granular material, IDOT gradation CA-7 or CA-11, shall be used to backfill underdrain trenches.
- (c) Well-graded granular backfill material placed in trenches under existing and proposed pavements shall be placed in lifts (12-inch maximum loose thickness) and mechanically compacted to not less than 92% of maximum dry density, as determined by the Standard Proctor Method (ASTM D698). Porous (free-draining) granular material shall be placed and compacted as specified by the Geotechnical Engineer.
- (d) Granular backfill placed in trenches located adjacent to pavements shall be jetted and water soaked, in lieu of mechanical compaction, if and where indicated on the Plans.
- (5) STRUCTURE ADJUSTMENT
- (a) Adjustments may be necessary to ensure that frames and grates match the elevation of the surrounding pavement or ground surface. Preformed adjusting rings of the proper dimensions needed to mate the frame to the precast structure shall be used. No more than 12 inches of vertical adjustment may be made using the minimum practical number of individual rings.
- (b) All rings shall be High Density Polyethylene Plastic (HDPE), Recycled Rubber, High Density Expanding Polystyrene, Expanded Polypolypropylene (EPP), or other material as approved by the City Engineer. Precast concrete rings, bricks, rocks, shims, or concrete blocks will not be allowed. Tapered adjusting rings shall be required when the frame will need to match the slope of the roadway.
- (c) A resilient, flexible, non-hardening, preformed bituminous mastic material, Conseal 102 b or approved equal, shall be used between the cone or top barrel section of the structure and the adjusting rings. A thick bead of non-hardening elastomeric joint sealant conforming to ASTM C-920, Type S, Grade NS, shall be applied between all individual rings, and between the adjusting rings and the frame. The sealant or mastic material shall be applied in such a manner that no surface water or ground water inflow can enter the surface.
- (d) All storm sewer structure frames without inside flanges shall be shaped with hydraulic cement or elastomeric joint sealant to form a fillet to the structure or adjusting rings and to maintain water-tightness.
- (e) Frame adjustments shall be completed in accordance with Sections 602 and 603 of Standard Specifications for Road and Bridge Construction, prepared by the Illinois Department of Transportation, latest edition, except as noted herein.
- (f) Structure adjustments shall be included in the prices of the utility structures being installed or modified and will not be paid for separately.
- (6) MARKER POSTS
- (a) Sewer and water main structures, valve boxes, and the end location of sewer stubs and building services shall be marked with a 4 x 4 x 8' wood post. Four feet of the post shall stand aboveground. The top 6 inches of the post shall be painted to identify the type of utility (sanitary - orange; storm - yellow; water - blue).
- (b) Providing and installing marker posts shall be incidental to the cost of sewer and water main construction.

B. SEPARATION OF WATER MAINS AND SEWERS

(1) HORIZONTAL SEPARATION

- (a) Water mains shall be located at least 10 feet horizontally (edge to edge) from existing or proposed sanitary sewers and storm sewers.
- (b) Water mains may be located closer than 10 feet to a sewer when:
- (i.) Local conditions prevent a lateral separation of 10 feet and
- (ii.) The bottom of the water main is at least 18 inches above the top of the sewer and
- (iii.) The water main is either in a separate trench or in the same trench on an earth shelf located to one side of the sewer.
- (c) When it is impossible to meet (i) or (ii) above, the sewer shall be encased in a water-tight pipe or constructed of pressure pipe meeting water main standards. The sewer shall also be pressure tested to maximum expected surcharge head before backfilling.
- (d) These requirements shall also apply to water service lines.
- (2) VERTICAL SEPARATION
- (a) Whenever a water main crosses a sanitary sewer or a storm sewer, the water main shall be separated from the sewer so that the bottom of the water main is at least 18 inches above the top of the sewer. This vertical separation shall be maintained for that portion of the water main located within 10 feet horizontally (measured perpendicular, either direction) of the O.D. of the sewer crossed.
- (b) Whenever the required 18-inch vertical separation cannot be maintained between a sewer and a water main, the water main shall be protected by means of one of the following methods:
- (i.) Construct the sewer of pressure pipe meeting water main standards for a distance of 10 feet each side (measured perpendicular) of the O.D. of the water main.
- (ii.) Install either the sewer or water main within a watertight casing pipe for a distance of 10 feet each side of the crossing (measured perpendicular to the line not provided with the casing pipe). Seal both ends of the casing with hydraulic gROUT.
- (iii.) The method to be used at each specific location shall be as indicated on the Plans. In the event that a clearance problem is not discovered until after construction is underway, Engineer shall determine which method to use.
- (c) A vertical separation of 18 inches between the bottom of the sewer and the top of the water main shall be maintained wherever a water main crosses under a sewer.
- (d) Construction requirements (regarding vertical separation, materials and structural support) at sewer-water main crossings shall be in conformance with the Standard Specifications for Water and Sewer Main Construction in Illinois.
- (e) These requirements shall also apply for water service lines.

C. SANITARY SEWERS SYSTEMS

- (1) See City of Naperville Department of Public Utilities (DPU) Water/Wastewater General Notes.

D. STORM DRAINAGE SYSTEMS

- (1) See City of Naperville - Transportation, Engineering, and Development (TED) Business Group Plan Notes for Development Projects.

E. WATER SUPPLY SYSTEMS

- (1) See City of Naperville - Department of Public Utilities (DPU) Water/Wastewater General Notes.

5. PAVEMENT CONSTRUCTION

A. GENERAL

- (1) All roadway, driveway, parking area, and sidewalk pavements (including curbs and shoulders) shall be constructed in accordance with the material and installation requirements of the current edition of the IDOT Standard Specifications, except where said requirements are modified by the following Project Technical Specifications.
- (2) Pavement markings and markers, and traffic control signs and devices, shall be provided, installed, and removed in accordance with the requirements of the IDOT Standard Specifications, except where said requirements are modified by the following Project Technical Specifications.



Civil & Environmental Consultants, Inc.
1230 East Diehl Road, Suite 200 - Naperville, IL 60563
630-963-6026 - 877-983-6026
www.ceehc.com

M-HOUSE DEVELOPMENT
M HOUSE CREEK ESTATES
831 SOUTH JULIAN STREET
NAPERVILLE, ILLINOIS 60540

GENERAL NOTES - 1

DATE:	MARCH 20, 2020	DRAWN BY:	FWB
DWG SCALE:		NONE	TJG
PROJECT NO:	191-272-0605		JGC
APPROVED BY:			
DRAWING NO:	C001		
SHEET	2	OF	9

REVISION RECORD

NO.	DATE	DESCRIPTION
1	03/20/20	NO REVISION THIS SHEET

A:\2019\1912-2271-C000\Draw\DOT-Final Engineering\191272-C001-C001-0001-General Notes.dwg (GENERAL NOTES 2) 15/06/11/2020 - 6:11/2020 6:33 AM - LF: 6/11/2020 6:33 AM

87

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 that 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 as follows with the required rate to be as 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, 3% 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 bar assemblies 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 be not 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 crumbling 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. Two 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 variations 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 1/2 inch or 10% (whichever is less) shall be removed and replaced if required by Engineer.

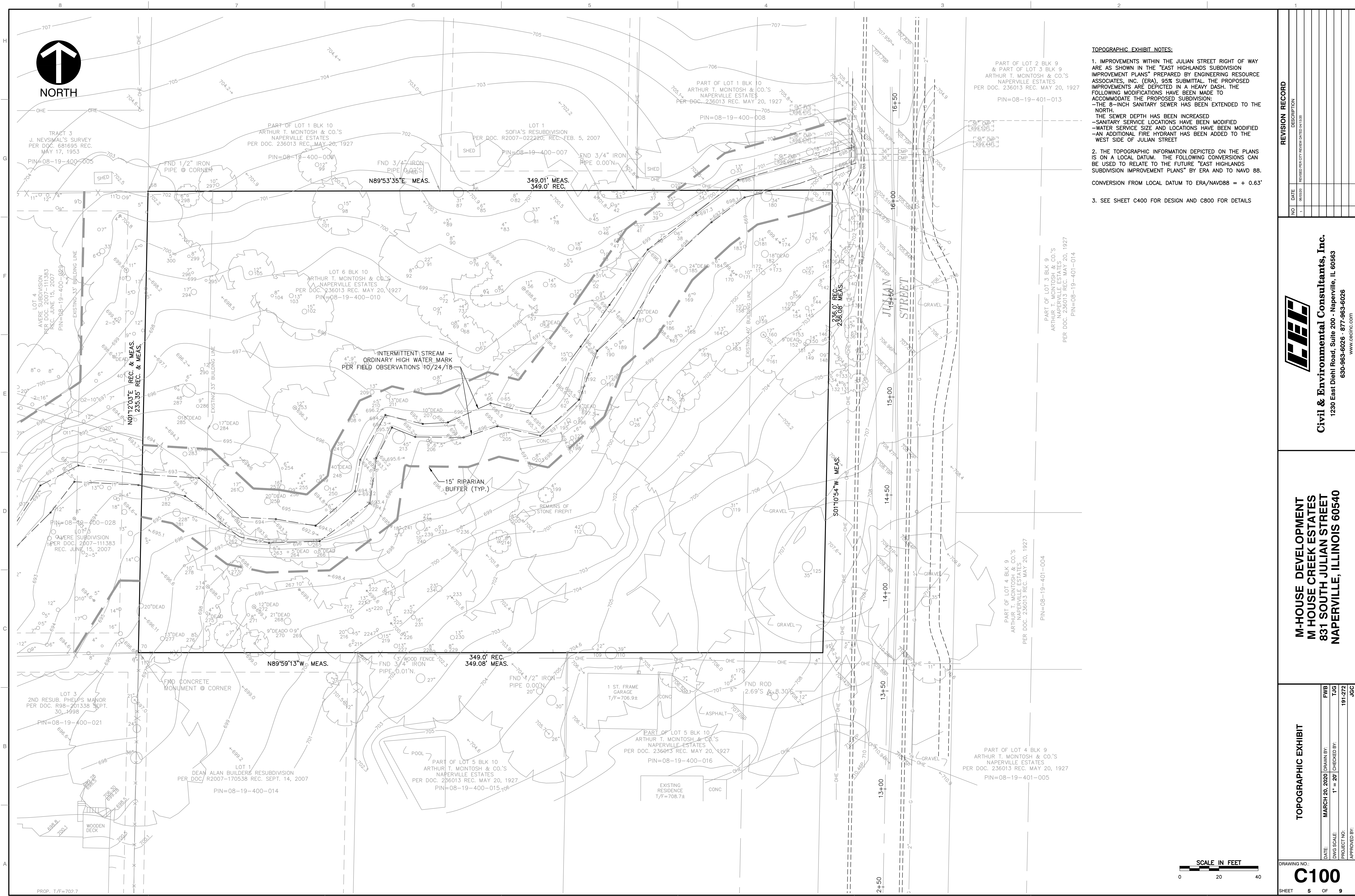
(3) Determination of pavement thickness shall be as indicated in IDOT Specifications Articles 407.10 (HMA) and 420.15 (PCC).

(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 linseed 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 marking 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 markers 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 not 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 1, 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 shall be required.							
(3) Surface stabilization measures shall be initiated immediately after earthwork operations have permanently ceased or have temporarily ceased on a 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 grades 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
--

	<div>CITY OF NAPERVILLE - DEPARTMENT OF PUBLIC UTILITIES WATER/WASTEWATER GENERAL NOTES</div> <div>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.</div> <div>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.</div> <div>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 will be allowed 10' in front of, 5' on the sides, and 7' to the rear of the electrical transformer.</div> <div>d. All retainer glands when required to restrain valves, fittings, hydrants, and pipe joints shall be mechanical joint wedge action type MEGALUG 110 series as manufactured by EBBA Iron, Inc. or UNI-FLANGE BLOCKBUSTER 1400 SERIES as manufactured by Ford Meter Box Co. and shall be for use on ductile iron pipe conforming to ANSI/AWWA C151/A21.51, for nominal pipe sizes 3" through 48".</div> <div>e. Existing ductile iron systems for restraining push-on pipe bells shall be MEGALUG SERIES 1100HD or FORD SERIES 1390.</div> <div>f. Existing ductile iron systems requiring restraint shall be MEGALUG SERIES 1100SD (split MEGALUG) for mechanical joints.</div> <div>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.</div> <div>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 vents (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 curb, or property corners.</div> <div>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.</div> <div>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 mixed letters on the valve body. Valves may be approved from one of the following manufacturers: American, Clow, Watrous or Kennedy.</div> <div>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, restraint, 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-Sez or approved equal.</div> <div>l. The contractor shall rotate and/or adjust any existing and/or new hydrant to the satisfaction of the Department of Public Utilities</div> <div>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 + 5 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 much trapped air in the tested section.</div> <div>n. The City of Naperville DPU-W/WW 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.</div> <div>o. Fire hydrant should be bagged "NOT IN SERVICE" until all testing and disinfection has been completed and new water main section is service.</div> <div>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</div> <div>q. All valve boxes, vaults, hydrants, and manholes shall not be covered with construction debris and shall remain accessible to the respective utility company.</div> <div>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.</div> <div>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 place 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:<div><div>i. 48-inch diameter - 60 seconds</div><div>ii. 60-inch diameter - 75 seconds</div><div>iii. 72-inch diameter - 90 seconds</div><div>iv. 84-inch diameter - 105 seconds</div></div>Any manholes that fail the test shall be sealed and re-tested until acceptable.</div> <div>t. The contractor shall provide internal televised 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.</div> <div>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.</div> <div>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 polywrap.</div> <div>w. All excavations more than 20 feet deep must be protected by a system designed by a registered professional engineer.</div> <div>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 pot hole by vacuum excavation or hand excavation to locate the existing utility to verify minimum clearance requirement.</div> <div>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.</div> <div>z. All brass components shall be certified to be lead free in compliance with NSF 61 and NSF 372 and identified with applicable markings.</div>	<div>TRANSPORTATION, ENGINEERING AND DEVELOPMENT BUSINESS GROUP STANDARD CONSTRUCTION PLAN NOTES FOR DEVELOPMENT PROJECTS</div> <div>7. MANHOLE STEPS ON MAXIMUM 16 INCH CENTER SHALL BE FURNISHED WITH EACH MANHOLE, SECURELY ANCHORED IN PLACE, TRUE TO VERTICAL ALIGNMENT, IN ACCORDANCE WITH THE NAPERVILLE STANDARD DETAILS. STEPS SHALL BE COPOLYMER POLYPROPYLENE REINFORCED WITH 1/2 INCH A615/A615M-05A (OR LATEST EDITION) GRADE 60 STEEL REINFORCEMENT, MEETING OR EXCEEDING ASTM C 478-05 (OR LATEST EDITION) AND OSHA STANDARDS.</div> <div>8. CATCH BASINS AND INLETS SHALL HAVE A MINIMUM INSIDE DIAMETER OF 24 INCHES AND SHALL BE CONSTRUCTED OF PRECAST CONCRETE UNITS IN ACCORDANCE WITH ASTM C478-05 (OR LATEST EDITION) AND SHALL CONFORM TO THE CITY OF NAPERVILLE STANDARD DETAIL. ALL CATCH BASINS AND INLETS SHALL BE WATER-TIGHT AT ALL POINTS BELOW GRADE. ALL VISIBLE LEAKS SHALL BE SEALED IN A MANNER ACCEPTABLE TO THE CITY ENGINEER. CATCH BASINS AND INLETS SHALL BE FURNISHED WITH A FRAME AND GRATE BASED UPON THE LOCATION OF THE INSTALLATION AS LISTED BELOW. ALL FRAMES AND</div> <div>GRATES SHALL MEET OR EXCEED AASHTO H-20 LOADING SPECIFICATIONS. FRAMES SHALL BE SHOP PAINTED WITH ASPHALTIC BASE PAINT.<div><div>a. PAVEMENT: EAST JORDAN IRON WORKS 1022 FRAME WITH TYPE M1 RADIAL FLAT GRATE, OR APPROVED EQUAL.</div><div>b. BARRIER CURB AND GUTTER: EAST JORDAN IRON WORKS 7220 FRAME WITH TYPE M1 GRATE AND TI CURB BOX, OR APPROVED EQUAL.</div><div>c. DEPRESSED CURB: EAST JORDAN IRON WORKS 5120 FRAME AND GRATE, OR APPROVED EQUAL.</div><div>d. MOUNTABLE CURB: EAST JORDAN IRON WORKS 7525 FRAME AND GRATE, OR APPROVED EQUAL.</div></div></div> <div>e. NON-PAVED AREAS: EAST JORDAN IRON WORKS 6527 BEEHIVE GRATE, OR APPROVED EQUAL. ALTERNATELY, IN AREAS WHERE THERE IS THE LIKELIHOOD OF PEDESTRIAN TRAFFIC, EAST JORDAN IRON WORKS 1022 FRAME WITH TYPE M1 RADIAL FLAT GRATE, OR APPROVED EQUAL MAY BE USED.</div> <div>9. ALL PIPE SHALL BE LAID TRUE TO LINE AND GRADE. DIRT AND OTHER FOREIGN MATERIAL SHALL BE PREVENTED FROM ENTERING THE PIPE OR PIPE JOINT DURING HANDLING OR LAYING OPERATIONS. ALL STORM SEWER PIPE TO PIPE CONNECTIONS SHALL BE SEALED WITH BUTYL MASTIC TO ENSURE WATER TIGHTNESS. LIFT HOLES TO BE SEALED USING BUTYL MASTIC AND CONCRETE PLUGS, AT NO TIME SHALL CONNECTIONS BETWEEN THE STORM SEWER AND SANITARY SEWER BE ALLOWED.</div> <div>10. FOR STRUCTURES LOCATED IN PAVED AREAS, A MINIMUM OF FOUR, 2-INCH DIAMETER HOLES SHALL BE DRILLED OR PRECAST INTO THE STRUCTURE WITHIN 1 FOOT OF THE LOWEST PIPE INVERT. THE HOLES SHALL BE DISTRIBUTED EQUIDISTANT AROUND THE PERIMETER OF THE STRUCTURE. A 1-FOOT BY 1- FOOT SECTION OF UNDERDRAIN FILTER CLOTH MATERIAL SHALL BE SUFFICIENTLY FIXED TO THE OUTSIDE OF THE MANHOLE WITH MASTIC MATERIAL TO PREVENT SLIPPAGE DURING BACKFILLING.</div> <div>ADJUSTMENTS MAY BE NECESSARY TO ENSURE THAT FRAMES AND GRATES MATCH THE ELEVATION OF THE SURROUNDING PAVEMENT OR GROUND SURFACE. PREFORMED ADJUSTING RINGS OF THE PROPER DIMENSIONS NEEDED TO MATE THE FRAME TO THE PRECAST STRUCTURE SHALL BE USED. NO MORE THAN 12 INCHES OF VERTICAL ADJUSTMENT MAY BE MADE USING THE MINIMUM PRACTICAL NUMBER OF INDIVIDUAL RINGS.</div> <div>ALL RINGS SHALL BE HIGH DENSITY POLYETHYLENE PLASTIC (HDPE), RECYCLED RUBBER, HIGH DENSITY EXPANDING POLYSTYRENE, EXPANDED POLYPROPYLENE (EPP), OR OTHER MATERIAL AS APPROVED BY THE CITY ENGINEER. PRECAST CONCRETE RINGS, BRICKS, ROCKS, SHIMS, OR CONCRETE BLOCKS WILL NOT BE ALLOWED. TAPEDED ADJUSTING RINGS SHALL BE REQUIRED WHEN THE FRAME WILL NEED TO MATCH THE SLOPE OF THE ROADWAY.</div> <div>A RESILIENT, FLEXIBLE, NON-HARDENING, PREFORMED BITUMINOUS MASTIC MATERIAL, CONSAL 102 B OR APPROVED EQUAL, SHALL BE USED BETWEEN THE CONE OR TOP BARREL SECTION OF THE STRUCTURE AND THE ADJUSTING RINGS. A THICK BEAD OF NON-HARDENING ELASTOMERIC JOINT SEALANT CONFORMING TO ASTM C-920, TYPE S, GRADE NS, SHALL BE APPLIED BETWEEN ALL INDIVIDUAL RINGS, AND BETWEEN THE ADJUSTING RINGS AND THE FRAME. THE SEALANT OR MASTIC MATERIAL SHALL BE APPLIED IN SUCH A MANNER THAT NO SURFACE WATER OR GROUND WATER INFLOW CAN ENTER THE STRUCTURE.</div> <div>ALL STORM SEWER STRUCTURE FRAMES WITHOUT INSIDE FLANGES SHALL BE SHAPED WITH HYDRAULIC CEMENT OR ELASTOMERIC JOINT SEALANT TO FORM A FILLET TO THE STRUCTURE OR ADJUSTING RINGS AND TO MAINTAIN WATER-TIGHTNESS.</div> <div>FRAME ADJUSTMENTS SHALL BE COMPLETED IN ACCORDANCE WITH SECTIONS 602 AND 603 OF STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, PREPARED BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION, LATEST EDITION, EXCEPT AS NOTED HEREIN.</div>	<div>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 SUFFICIENTLY 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 AN IMPERFECT EDGE, THEN THE EXISTING SIDE MUST BE RE-CUT SQUARE AND DONE OVER UNTIL IT IS CORRECT.</div> <div>TRAFFIC CONTROL AND PROTECTION NOTES (GENERAL)</div> <div>1. ALL DEVELOPERS AND CONTRACTORS SHALL PROVIDE SUITABLE TRAFFIC CONTROL FOR THEIR CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH PART 6 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION. TRAFFIC CONTROL MUST BE PROVIDED FOR ANY ACTIVITY THAT IMPACTS TRAFFIC FLOW. THIS INCLUDES, BUT IS NOT LIMITED TO, ROAD CLOSURES REQUIRING DETOURS, DAILY LANE CLOSURES, LONG TERM LANE CLOSURES, NARROW LANES, AND CONSTRUCTION VEHICLES ENTERING AND EXITING THE PUBLIC ROADWAY. ALL TRAFFIC CONTROL SET- UPS MAY BE INSPECTED BY THE CITY OF NAPERVILLE TO ENSURE THAT THEY ARE PROVIDING POSITIVE GUIDANCE TO MOTORISTS AND ARE NOT IN THEMSELVES PRESENTING A HAZARDOUS SITUATION. A REPRESENTATIVE OF THE DEVELOPER OR CONTRACTOR MUST PROVIDE PHONE NUMBERS AT WHICH THEY CAN BE REACHED 24 HOURS A DAY AND ON WEEKENDS SO THAT THEY CAN MAINTAIN TRAFFIC CONTROL DEVICES.</div> <div>2. PEDESTRIANS MUST BE PROVIDED WITH A SAFE ALTERNATE ROUTE IF PEDESTRIAN FACILITIES ARE TO BE CLOSED AS A RESULT OF CONSTRUCTION ACTIVITIES. GUIDANCE MUST BE PROVIDED TO PEDESTRIANS SO THAT THEY MAY AVOID THE WORK ZONE. SAID PEDESTRIAN DETOUR PLAN (WITH SIGNAGE) IS TO BE REVIEWED AND ACCEPTED BY THE CITY IN WRITING, PRIOR TO THE COMMENCEMENT OF THE WORK.</div> <div>3. THE CONTRACTOR SHALL EMPLOY THE APPROPRIATE METHODS OF TRAFFIC CONTROL IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, SUCH THAT THE SAFETY OF VEHICLES, AND PEDESTRIANS IS PRESERVED AT ALL TIMES. THE ERECTION AND MAINTENANCE OF THE TRAFFIC CONTROL DEVICES SHALL BE TO THE SATISFACTION OF THE AGENCY OF JURISDICTION AND THE CITY ENGINEER.</div> <div>4. ANY TEMPORARY OPEN HOLES SHOULD BE BARRICADED AND PROTECTED IN ACCORDANCE WITH APPLICABLE STANDARDS.</div> <div>5. A MINIMUM 72 HOUR NOTICE IS REQUIRED FOR TRAFFIC CONTROL THAT REDUCES THE WIDTH OF A</div>
--	--	--	---

A:\2019\191-2721 - C400\DWG\DWG-1-Topographic Exhibit.dwg(191272-001-010-Topographic Exhibit.dwg) LS(6/11/2020 - noon) - (P: 6/11/2020 6:27 AM



- TOPOGRAPHIC EXHIBIT NOTES:**
- IMPROVEMENTS WITHIN THE JULIAN STREET RIGHT OF WAY ARE 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 IS 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

REVISION RECORD	
NO.	DATE
1	06/03/20

DESCRIPTION
REVISED PER CITY REVIEW DATED 04/13/20

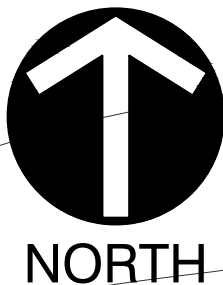
CEHC
Civil & Environmental Consultants, Inc.
1230 East Diehl Road, Suite 200 - Naperville, IL 60563
630-963-6026 - 877-963-6026
www.cehinc.com

M-HOUSE DEVELOPMENT
M HOUSE CREEK ESTATES
831 SOUTH JULIAN STREET
NAPERVILLE, ILLINOIS 60540

TOPOGRAPHIC EXHIBIT	
DATE:	MARCH 20, 2020
DWG SCALE:	1" = 20'
PROJECT NO:	191-2721
APPROVED BY:	JGC

DRAWING NO. C100	
DATE:	MARCH 20, 2020
DRAWN BY:	TJG
CHECKED BY:	191-2721
APPROVED BY:	JGC

SHEET 5 OF 9



2" TYPE "K" WATER SERVICE AT A MINIMUM 5' DEPTH. DIRECTIONAL BORE WHERE REQUIRED TO MISS EXISTING TREES, ETC. DIP WATER SERVICE 4"± BELOW PROPOSED TWIN 36" DRIVEWAY CULVERTS. PROVIDE INSULATION AT TOP OF WATER SERVICE, 692.5±. WHERE TRENCHING IS POSSIBLE, DISTURBED AREA SHALL BE RESTORED TO ITS ORIGINAL CONDITION.

DROP SIDING 6" ABOVE PROPOSED GRADE

R-4340-B
IN-B-3.6
701.80R
697.00

84"~12" RCP
TY. 1 @ 0.60%

2" PVC SDR 26 (ASTM 2241 W/ 3139 JOINTS) FORCE MAIN AT A MINIMUM 5' DEPTH. WHERE THE FORCE MAIN IS DIRECTIONALLY BORED TO MISS EXISTING TREES, RESTRAINED JOINTS SHALL BE USED. DIP FORCE MAIN 4"± BELOW PROPOSED TWIN 36" DRIVEWAY CULVERTS. PROVIDE INSULATION AT TOP OF FORCE MAIN, 692.8±. WHERE TRENCHING IS POSSIBLE, DISTURBED AREA SHALL BE RESTORED TO ITS ORIGINAL CONDITION.

CONSTRUCT (2) 42"~36" CMP
TYPE 1 @ 1.00%
INV. ELEV NE=697.00
INV. ELEV SW=696.58
STABILIZE NE & SW WITH
STONE OUTCROPPINGS (RIFLE).

FUTURE SIDEWALK AND GRADING
IN THIS AREA BY OTHERS

2~36" RCP W/
JUNCTION BOX
(BY OTHERS)

36" CMP
699.52C
36" CMP
699.44F
ERA CEC
704.99TC 704.36TC
704.96 CEC
704.96 CEC
701.42 700.86

SAN. M.H. (BY OTHERS)
STA. 15+57, 28' LT.
RIM=704.20
INV=699.20
STUB 10'± OF 2" PVC
SDR26 (ASTM 2241)
WEST OF M.H. FOR
FUTURE FORCE MAIN
CONNECTION

12"STM INV=700.2±
1.5" W.S. TP=698.5±

8"SAN INV=699.3±
1.5" W.S. TP=697.6±

F.H. #1
G.R. ELEV=704.3
(BY OTHERS)

1.5"W.S. TP=702.0±
8"SAN INV=699.7±

12"STM INV=701.1±
1.5" W.S. TP=699.4±

EJW 1566
CLEAN-OUT
RIM=706.85
INV=700.00±

ERA CEC
709.73TC 709.10TC
709.21 709.61
ERA CEC
708.43B 708.80B
705.95 704.32
ERA CEC
709.73TC 709.10TC
706.21 705.60

DRAINAGE AND GRADING NOTES

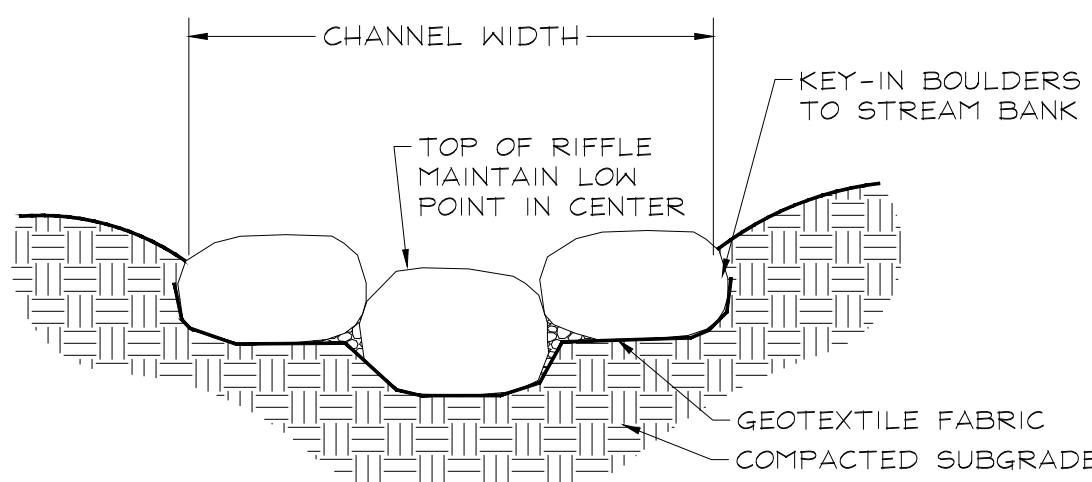
- ALL BACK YARD SWALES SHALL BE CUT OR FILLED SIX (6) INCHES BELOW FINISHED GRADE.
- TOPSOIL SHALL BE REMOVED FROM ALL AREAS THAT RECEIVE CLAY FILL.
- T/F - INDICATES PROPOSED TOP OF FOUNDATION ELEVATION AND THE LOWEST OPENING IN A CONVENTIONAL FOUNDATION WHERE SURFACE RUNOFF CAN ENTER THE FOUNDATION.
- IN GENERAL THE TOP OF WINDOW WELLS SHALL BE CONSTRUCTED NO LOWER THAN 6 INCHES BELOW THE TOP OF FOUNDATION ELEVATION (T/F).
- THE FINISHED TOPSOIL ELEVATION AT THE FOUNDATION SHOULD GENERALLY BE 6 INCHES BELOW THE TOP OF FOUNDATION ELEVATION, UNLESS INDICATED OTHERWISE.
- G/F - INDICATES THE PROPOSED GARAGE FLOOR ELEVATION. THE PLACEMENT OF THE GARAGE/DRIVEWAY IS STRONGLY SUGGESTED WHEN AND WHERE SHOWN ON THIS PLAN.
- L/O OR W/O - INDICATES THOSE LOTS WHERE A "LOOK-OUT" (L/O) OR "WALK-OUT" (W/O) BASEMENT CAN BE CONSTRUCTED. THE REQUIRED ELEVATION OF THE LOWEST FOUNDATION OPENING IS GIVEN. IF A LOOK-OUT OR WALK-OUT BASEMENT IS NOT DESIRED, A DETAILED GRADING PLAN OF ALTERNATE DESIGN MUST BE SUBMITTED TO THE CITY OF NAPERVILLE.
- ACCENTED SIDES OF PROPOSED HOUSE FOUNDATIONS ARE INTENDED TO INDICATE THE APPROXIMATE LOCATION WHERE A LOOK-OUT OR WALK-OUT BASEMENT MAY BE CONSTRUCTED OR TO INDICATE THAT SPECIAL CONSTRUCTION MEASURES MUST BE EMPLOYED IN ORDER TO MINIMIZE SIDE YARD, REAR YARD, AND/OR FRONT YARD GRADIENTS (E.G. DROPPED SIDING, STEPPED FOUNDATION, RETAINING WALL, ETC.) - SEE NOTES ABOVE FOR FURTHER DETAILS.
- INDICATES THE LOCATION AND DIRECTION OF AN OVERLAND DRAINAGE ROUTE THAT MUST BE RESERVED IN ALL FINAL GRADING OPERATIONS.
- PROPOSED SIDEWALK SHALL HAVE A MAXIMUM 2% TRANSVERSE SLOPE FROM EAST TO WEST.
- FUTURE IMPROVEMENTS ARE BASED ON "EAST HIGHLANDS SUBDIVISION IMPROVEMENTS" ENGINEERING PLANS BY ENGINEERING RESOURCES ASSOCIATES, INC. DATED MAY 2008.
- THE TOPOGRAPHIC INFORMATION DEPICTED ON THE PLANS IS 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 = + 0.83'
- FOR STREAM STABILIZATION, SEE "RIPARIAN ENHANCEMENT LANDSCAPE PLAN" PREPARED BY GARY R. WEBER ASSOCIATES, INC. DATED JUNE 3, 2020.

RIFLE TABLE

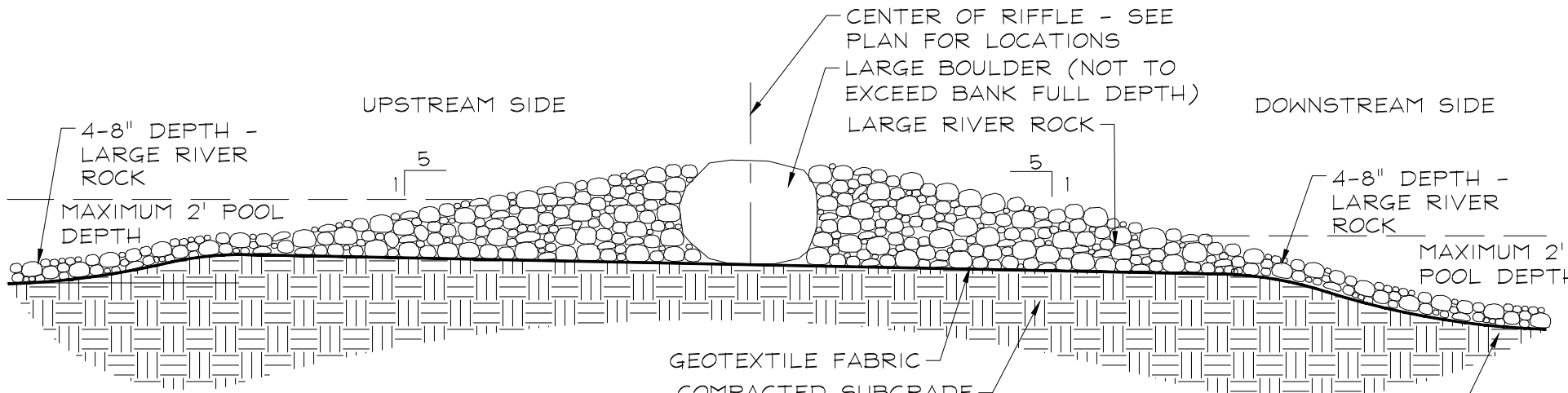
TOP OF RIFLE	ELEVATION
①	697.8
②	697.0
③	696.5
④	695.7
⑤	694.9
⑥	693.4
⑦	693.1
⑧	692.8

CREEK CROSS SECTIONS

SECTION	100 YEAR FLOW (CFS)	100 YEAR HIGH WATER LEVEL
A-A	138	699.54
B-B	138	696.99
C-C	143.75	696.38
D-D	143.75	696.22



RIFLE CROSS SECTION
SCALE: N.T.S.



RIFLE DETAIL
SCALE: N.T.S.

REVISION RECORD

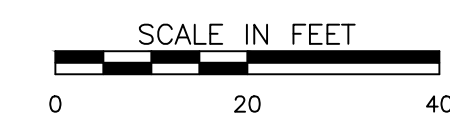
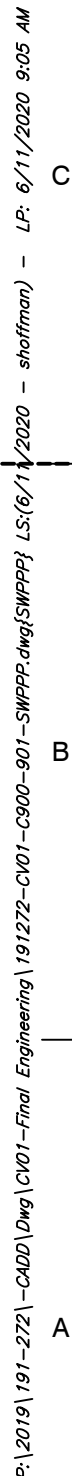
NO.	DATE	DESCRIPTION
1	06/03/20	ISSUED PER CITY REVIEW DATED 04/10/20

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

**M-HOUSE DEVELOPMENT
M HOUSE CREEK ESTATES
831 SOUTH JULIAN STREET
NAPERVILLE, ILLINOIS 60540**

GRADING & UTILITY PLAN

DRAWING NO. **C400**
SHEET 6 OF 9



PROPOSED IMPERVIOUS AREA = 19,026 S.F.

DRAWING NO.:
C900
SHEET 8 OF 9

