# CITY OF GOODLETTSVILLE MARSHALL GREENE SLOPE REPAIR GOODLETTSVILLE, SUMNER COUNTY, TN AUGUST 2022



VICINITY MAP

**RESOURCE LIST** PLANNING DEPARTMENT: 17 MEMORIAL DRIVE

(615) 851-2200 FIRE DEPARTMENT: 105 LONG HOLLOW PIKE

GOODLETTSVILLE, TN 37072

GOODLETTSVILLE, TN 37072 (615) 851-2245

BUILDING INSPECTION & CODES: 117 MEMORIAL DRIVE GOODLETTSVILLE, TN 37072 (615) 851-2200

WATER: MADISON SUBURBAN UTILITY DISTRICT 108 WEST WEBSTER STREET MADISON, TN 37115 (615) 868-3201

GAS COMPANY: PIEDMONT NATURAL GAS 83 CENTURY BLVD. NASHVILLE, TN 37214 (615) 872-2405

ELECTRIC COMPANY: NASHVILLE ELECTRIC SERVICE 1214 CHURCH STREET NASHVILLE, TN 37246 (615) 736–6900

TELEPHONE COMPANY: AT&T P.O. BOX 105503 ATLANTA, GA 30348

(866) 620-6000 PUBLIC WORKS DEPARTMENT: 215 CARTWRIGHT STREET GOODLETTSVILLE, TN 37072 (615) 851–2200

STORMWATER & SEWER: 215 CARTWRIGHT STREET GOODLETTSVILLE, TN 37072

(615) 851-2200



## VICINITY MAP SCALE IN FEET 200

## CIVIL ENGINEER

CIVIL & ENVIRONMENTAL CONSULTANTS, INC. 117 SEABOARD LANE, SUITE E100 FRANKLIN, TENNESSEE 37067 (615)-333-7797 PH CONTACT: JEFF SHAVER FMAIL: JSHAVER@CECINC.COM

## DEVELOPER/OWNER

CITY OF GOODLETTSVILLE 117 MEMORIAL DRIVE GOODLETTSVILLE, TN 37072 (615) 851-2200 PH: CONTACT: GREG EDRINGTON EMAIL: GEDRINGTON@GOODLETTSVILLE

## SURVEYOR

CIVIL AND ENVIRONMENTAL CONSULTANTS, INC 117 SEABOARD LANE, SUITE E100 FRANKLIN, TENNESSEE 37067 (615)-333-7797 РН CONTACT: JAMES COOLEY JCOOLEY@CECINC.COM EMAIL:

# **INDEX OF SHEETS**

SHEET	DESCRIPTION
C000	COVER SHEET
C001	GENERAL NOTES
C002 - C003	TECHNICAL SPECIFICATIONS
C004	BORING LOGS
C100	EXISTING CONDITIONS & DEMOLITION PLAN
C200	OVERALL PROPOSED CONDITIONS
C201	PROPOSED PIER WALL PLAN
C202	PROPOSED PIER WALL PROFILE
C203 - C204	PROPOSED PIER WALL CROSS-SECTIONS
C800 - C801	DETAILS
C900	EPSC PLAN

## **RETAINING WALL DESIGN BASIS:**

1. 2018 INTERNATIONAL BUILDING CODE

2. SUBSURFACE SOIL CONDITIONS AND GEOTECHNICAL INFORMATION IS BASED ON BORINGS PERFORMED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND INCLU ON DRAWING C004.

3. SOIL AND BEDROCK RESISTANCE LOADS BASED ON A SAFETY FACTOR OF 1.5.

4. GLOBAL STABILITY BASED ON A SAFETY FACTOR OF 1.5.

5. THE DESIGN SHEAR AND MOMENT (INCLUDING A SAFETY FACTOR OF 1.5 FOR GLOB, STABILITY) FOR THE 24-INCH DIAMETER PIERS IS 82 KIPS AND 1360 IN-KIPS. RESPECTIVELY.

6. THE DRILLED SHAFTS HAVE BEEN DESIGNED FOR A MAXIMUM DEFLECTION OF 1 INC AT THE TOP OF PIER.

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	REVISION RECORD	D DATE DESCRIPTION							н 
					ital Consultants, Inc.	E-100 · Franklin, TN 37067	· 800-763-2326	cinc.com	F
PLAN					UIVII & ENVIRONMEN	117 Seaboard Lane · Suite	615-333-7797 ·	WWW.CEC	E
JDED		ODI ETTSVILLE			E REPAIR	TSVILLE. TN			D
BAL		CITY OF GO			SLOPE	GOODLET			с
					MLW	APA	193-778	JBS	
		COVER SHEFT			AUGUST 2022 DRAWN BY:	AS SHOWN CHECKED BY:			В
	DRA	WING N	NO.:	<b>~</b>	DATE:	DWG SCALE:	PROJECT NO:	APPROVED BY:	A
110000000000000000000000000000000000000			_[						Ĩ

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ſ	CONSTRUCTION	DEMOLITION
4	<ol> <li>EXISTING CONDITIONS AS DEPICTED ON THESE 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 BIDDING ON THIS PROJECT. IF CONDITIONS ENCOUNTERED DURING</li> </ol>	1. CLEARING LIMITS S
	EXAMINATION ARE SIGNIFICANTLY DIFFERENT THAN THOSE SHOWN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.	2. ALL DEMOLITION W BE REMOVED BY TH
	COMPANY REQUIREMENTS, CODES, AND SPECIFICATIONS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.	3. TAKE CARE TO PRO STANDARDS AT NO
	3. ALL WORK PERFORMED BY THE CONTRACTOR SHALL CONFORM TO THE LATEST REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT.	4. ALL UTILITY DISCON UTILITY COMPANY//
	4. TOPOGRAPHICAL INFORMATION TAKEN FROM SURVEY COMPLETED BY CIVIL AND ENVIRONMENTAL CONSULTANTS, INC. ON JANUARY 10, 2020. 5. BEFORE INSTALLATION OF STORM SEWER, OR OTHER UTILITY, THE CONTRACTOR SHALL VERIFY ALL CROSSINGS, BY EXCAVATION WHERE NECESSARY,	5. CONTRACTOR SHA CONTRACTOR SHA THE ENGINEER OF
f	AND INFORM THE OWNER AND THE ENGINEER OF ANY CONFLICTS.	6. CONTRACTOR SHA DAMAGED AS A RE
	GENERAL PUBLIC AND THE RESIDENTS ALONG THE PROPOSED CONSTRUCTION AREA.	7. ALL UTILITY AND ST BY A CERTIFIED PR
	PROCESSES ARE ASSUMED TO CARRY AN IMPLIED STATEMENT OF "OR APPROVED EQUAL" UNLESS SPECIFICALLY NOTED OTHERWISE WITH "NO SUBSTITUTIONS ALLOWED".	8. NO TREES SHALL B THE OWNER'S BEP
	8. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP, INCLUDING BUT NOT LIMITED TO EXCAVATION AND CONCRETE, SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATION, DETAILS, AND REQUIREMENTS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION (TDOT).	9. ALL PAVEMENT, BA
	9. CONTRACTOR SHALL REFER TO OTHER PLANS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE PROJECT.	PAVEMENT OR BUI WITH THE SPECIFIC
	10. ALL PROPOSED GRADES SHOWN ARE FINAL GRADES OR TOP OF PIERS, UNLESS INDICATED OTHERWISE 11. THE STRUCTURAL FILL AND DITCH CONSTRUCTION SHALL BE PERFORMED AFTER INSTALLATION OF THE REINFORCED PIERS.	
	12. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND OWNER'S REPRESENTATIVE FOR ANY AND ALL INJURIES AND/OR DAMAGES	12.EROSION PREVENT
	SPECIFICATIONS.	13.IT IS NOT EXPECTE
	AND/OR OWNER'S REPRESENTATIVE UPON COMPLETION.	
	14. ACCESS TO OCCUPIED RESIDENCES IN THE VICINITY OF THE WORK AREA SHALL BE MAINTAINED AT ALL TIMES. 15. SCHEDULE ALL WORK IN A CAREFUL MANNER WITH ALL NECESSARY CONSIDERATION FOR NEARBY RESIDENTS AND PROPERTY OWNERS. WORK	
	HOURS SHALL BE BETWEEN 7 A.M. AND SUNSET MONDAY THROUGH FRIDAY, BETWEEN 9 A.M. AND 6 P.M. SATURDAY, AND 12 P.M. AND 6 P.M. SUNDAY, UNLESS COORDINATED WITH CITY AND OWNER.	2. OPEN BURNING IS I
1 L	6. CONTRACTOR SHALL PROVIDE CITY WITH A CONSTRUCTION SCHEDULE FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.	
	1. THE CONTRACTOR SHALL CHECK EXISTING GRADES, DIMENSIONS, LAYOUT OF PIERS AND UTILITY INVERTS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD DIMENSIONS AND ELEVATIONS DURING THE ENTIRE CONSTRUCTION	3. DISPOSAL OF ONSI ONSITE SOIL STABI
	SCHEDULE. IF ANY DISCREPANCIES ARE FOUND IN THESE PLANS FROM ACTUAL FIELD DIMENSIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY.	4. WASTE MATERIAL ( CONTRACTOR. IMP NECESSARY PERMI
	<ol> <li>THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES, CARE SHALL BE TAKEN TO PROTECT UTILITIES THAT ARE TO REMAIN. RELOCATE EXISTING UTILITIES AS INDICATED, BASED UPON UTILITY COMPANY SPECIFICATIONS, AND AS NECESSARY FOR CONSTRUCTION. INSTALL ALL UTILITIES, INCLUDING CONDUITS, PRIOR TO INSTALLATION OF PAVED SURFACES.</li> </ol>	5. MATERIALS AND LA
	<ol><li>PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT. FIELD ADJUSTMENT OF FINAL GRADES WITH THE WRITTEN APPROVAL OF THE ENGINEER MAY BE NECESSARY.</li></ol>	ENVIRONMENTAL P PERMITTED SITES I CONTACT THE ENG
4	. ALL DAMAGE TO EXISTING PAVEMENT TO REMAIN WHICH RESULTS FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH LIKE MATERIALS AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO PROVIDE PRE-CONSTRUCTION PHOTO DOCUMENTATION OF THE ENTIRE SITE TO ENGINEER BEFORE	EROSION PREVENTION
5.	BEGINNING WORK. CONTRACTOR SHALL MAINTAIN ONE SET OF AS-BUILT/RECORD DRAWINGS ON THE JOB SITE DURING CONSTRUCTION FOR DISTRIBUTION TO THE OWNER	1. THE CONTRACTOR CONTROL.
6	AND/OR OWNER'S REPRESENTATIVE UPON COMPLETION.	2. EROSION AND SED ENVIRONMENT ANI
<u>l</u>	JTILITIES	3. SITE EROSION CON AFTER THE NEED IS
1.	ALL PROPOSED UTILITY LINES AND EXTENSIONS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE UTILITY COMPANY SPECIFICATIONS. CONTRACTOR SHALL COORDINATE UTILITY DISCONNECTIONS WITH THE APPROPRIATE AGENCY.	4. ANY OFF SITE SED BY METHODS AGRE
2	2. THE CONTRACTOR IS PARTICULARLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF THE EXISTING UTILITIES SHOWN HEREON IS BASED ON TOPOGRAPHIC SURVEYS AND RECORD DRAWINGS. THE CONTRACTOR SHALL NOT RELY UPON THIS INFORMATION AS BEING EXACT OR COMPLETE. SHOULD UNCHARTED UTILITIES BE ENCOUNTERED DURING EXCAVATION OPERATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR	5. STABILIZE AREAS V
	INSTRUCTIONS. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION AND REQUEST FIELD VERIFICATION OF UTILITY LOCATIONS.	6. CONTRACTOR SHA OWNER DURING PF SANITARY WASTES
;	<ol> <li>THE CONTRACTOR SHALL OBTAIN ALL REQUIRED UTILITY WORK PERMITS PRIOR TO COMMENCEMENT OF CONSTRUCTION.</li> <li>THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE SEQUENCING OF CONSTRUCTION FOR ALL UTILITY LINES SO THAT WATER LINES AND</li> </ol>	7. ALL EPSC MEASUR
	UNDERGROUND ELECTRIC CONDUITS DO NOT CONFLICT WITH SANITARY SEWERS OR STORM SEWERS. INSTALL UTILITIES PRIOR TO PAVEMENT CONSTRUCTION.	8. LAND DISTURBING
	<ol> <li>ADJUST ALL EXISTING UTILITY SURFACE FEATURES INCLUDING BUT NOT LIMITED TO CASTINGS, VALVE BOXES, PEDESTALS, CLEANOUTS, ETC. TO MATCH PROPOSED FINISHED GRADES, UNLESS OTHERWISE INDICATED.</li> </ol>	10. THE GENERAL CON AND SEDIMENT CC
	6. THE LOCATIONS OF UTILITIES SHOWN WITHIN THESE PLANS ARE APPROXIMATE ONLY. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD BY CONTACTING THE UTILITY COMPANIES INVOLVED. NOTIFICATION BY CALLING THE TENNESSEE ONE CALL SYSTEM, INC., AT 1-800-351-1111 AS REQUIRED BY TCA 65-31-106 WILL BE REQUIRED.	11.SHOULD CONSTRU
	7. UNLESS OTHERWISE NOTED, ALL UTILITY ADJUSTMENTS WILL BE PERFORMED BY THE UTILITY OR ITS REPRESENTATIVE. THE CONTRACTOR AND UTILITY OWNERS WILL BE REQUIRED TO COOPERATE WITH EACH OTHER IN ORDER TO EXPEDITE THE WORK REQUIRED BY THIS CONTRACT. ON CONTRACTS	GRADING
	WHERE CONSTRUCTION STAKES, LINES, AND GRADES ARE CONTRACT ITEMS, THE CONTRACTOR WILL BE REQUIRED TO PROVIDE RIGHT-OF-WAY OR SLOPE STAKES, DITCH OR STREAM BED GRADES, OR OTHER ESSENTIAL SURVEY STAKING TO PREVENT CONFLICTS WITH THE HIGHWAY CONSTRUCTION. FREQUENTLY, THIS WILL BE REQUIRED AS THE FIRST ITEM OF WORK AND AT ANY LOCATION ON THE PROJECT DIRECTED BY THE ENGINEER.	1. CONTRACTOR SHAI 2. EARTHWORK SHALL
	8. THE CONTRACTOR WILL PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION OF THIS PROJECT. IN THE EVENT THAT SPECIAL EQUIPMENT IS REQUIRED TO WORK OVER AND AROUND THE UTILITIES. THE CONTRACTOR WILL BE REQUIRED	REPLACEMENT, IF F 3. CONTRACTOR TO B
	TO FURNISH SUCH EQUIPMENT.	4. ALL AREAS NOT PA
	WHICH UTILITY RELOCATIONS AND/OR ADJUSTMENTS WILL HAVE UPON THE SCHEDULE OF WORK FOR THE PROJECT. WHILE SOME WORK MAY BE REQUIRED "AROUND" UTILITY FACILITIES THAT WILL REMAIN IN PLACE, OTHER UTILITY FACILITIES MAY NEED TO BE ADJUSTED CONCURRENTLY WITH THE CONTRACTOR'S OPERATIONS, ADVANCE OF FAR CUTTING MAY BE REQUIRED BY THE ENGINEER AT ANY LOCATION WHERE CLEARING IS CALLED FOR IN THE	5. ALL EXCESS SOIL N AND PERMIT REQUI
	PLANS AND CLEAR CUTTING IS NECESSARY FOR A UTILITY RELOCATION.	6. ANY AREA THAT IS I EXPENSE.
	PERMITS, PLANS & RECORDS 1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND OBTAIN ANY NECESSARY ENVIRONMENTAL PERMITS OR APPROVALS, INCLUDING BUT NOT	7. THE CONTRACTOR DEFINED BY THE FE (NON-WETLAND) AR
	LIMITED TO ARCHAEOLOGY, ECOLOGY, HISTORICAL, HAZARDOUS MATERIALS, AIR AND NOISE, TDEC ARAP/401, USACE SECTION 404, AND TDEC NPDES PERMITS, FROM FEDERAL, STATE AND/OR LOCAL AGENCIES REGARDING ANY MATERIAL AND STAGING AREAS AND THE OPERATION OF ANY PROJECT-DEDICATED ASPHALT AND/OR CONCRETE PLANTS TO BE USED. ANY SUCH PERMITS SHALL BE SUPPLIED TO THE OWNER PRIOR TO THE USE OF	OTHER LICENSÉS O
	THE PERMITTED AREA(S).	1. DISTANCES SHOWN
	BROUGHT TO THE ATTENTION OF THE OWNER. THE OWNER SHALL BE CONTACTED IN THESE INSTANCES AND DECIDE WHICH HAS PRECEDENCE AND WHETHER PERMIT OR PLAN REVISIONS ARE NEEDED. IN GENERAL, PERMIT CONDITIONS WILL PREVAIL.	2. THE CONTRACTOR NEW STORMWATER
	3. IF A CHANGE IN PROJECT SCOPE OCCURS DURING CONSTRUCTION, INCLUDING VALUE ENGINEERING, THE OWNER SHALL BE CONTACTED TO DETERMINE WHETHER PERMIT REVISIONS ARE NEEDED. THE OWNER SHALL BE CONTACTED TO DETERMINE IF ANY PLAN REVISIONS ARE NEEDED.	3. ALL STORMWATER I
	4. THE CONTRACTOR SHALL REVIEW ALL EXISTING PERMITS TO ENSURE THAT WORK AT PERMITTED SITES DOES NOT EXCEED THE EXPIRATION DATE. IF WORK IS GOING TO BE CONTINUED AFTER EXPIRATION DATES, THE CONTRACTOR SHALL CONTACT THE OWNER TO COMMENCE PERMIT RENEWAL PROCESS	ROADWAY CONSTR
	5. THE EPSC PLAN IS TO SERVE AS AN INITIAL GUIDE FOR SITE PERSONNEL AS THE CONSTRUCTION PROCESS DEVELOPS. IT MUST BE AMENDED, MODIFIED, AND UPDATED WHENEVER A CHANGE IN THE DESIGN OR CONSTRUCTION OF THE PROJECT OCCURS. THE STAGES DEPICTED IN THE EPSC PLANS MAY NOT	PIER WALL CONSTRUC
	COINCIDE WITH THE ACTUAL PHASES OF CONSTRUCTION ESTABLISHED BY THE CONTRACTOR DURING CONSTRUCTION, THUS MODIFICATIONS WILL BE REQUIRED TO ENSURE THE EPSC PLAN IS MAINTAINED TO DEPICT CURRENT SITE CONDITIONS. IT SHOULD BE MAINTAINED SUCH THAT IT WILL ALWAYS BEELECT THE MEASURES THAT ARE INSTALLED DURING THE VARIOUS PHASES OF CONSTRUCTION. IT IS IMPRACTICAL TO DETERMINE ALL THE	TO BE THE FINAL JU GOODLETTSVILLE, A
	INTERMEDIATE PHASES OF CONSTRUCTION THAT WILL OCCUR, THUS THESE DOCUMENTS WILL HAVE TO BE UPDATED THROUGHOUT THE LIFE OF THE	2. THE CONTRACTOR

5	4	3

SHALL BE PHYSICALLY MARKED IN THE FIELD.

ASTE AND CONSTRUCTION DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL HE CONTRACTOR AND DISPOSED OF OFFSITE ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.

DTECT UTILITIES THAT ARE TO REMAIN. DAMAGE TO UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR TO UTILITY COMPANY ADDITIONAL COST TO THE OWNER.

NECTION, REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED WITH THE APPROPRIATE AGENCY. UTILITY CONTACTS ARE LISTED ON THE COVER SHEET (SHEET C000).

ALL PROTECT ALL CORNER PINS, MONUMENTS, PROPERTY CORNERS AND BENCHMARKS DURING DEMOLITION ACTIVITIES. IF DISTURBED, ALL HAVE DISTURBED ITEMS RESET BY A LICENSED SURVEYOR AT NO ADDITIONAL COST TO THE OWNER, PROVIDING CERTIFICATION TO RECORD FOR EACH ITEM REPLACED.

LL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND FEATURES TO REMAIN. ANY ITEMS TO REMAIN THAT HAVE BEEN DISTURBED OR SULT OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

RUCTURE REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED AND PROPERLY DOCUMENTED ROFESSIONAL, WHEN APPLICABLE, WITH THE APPROPRIATE UTILITY COMPANY, MUNICIPALITY AND/OR AGENCY.

BE REMOVED, NOR VEGETATION DISTURBED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT THE EXPRESS WRITTEN APPROVAL OF RESENTATIVE.

SE COURSES, SIDEWALKS, CURBS, BUILDINGS, FOUNDATIONS, DITCHES, ETC., WITHIN THE AREA TO BE DEMOLISHED SHALL BE DEPTH, UNLESS OTHERWISE NOTED ON THIS PLAN SET. EXISTING BASE COURSE MATERIALS MAY BE WORKED INTO THE NEW ILDING SUBGRADE PROVIDED THAT THE GRADATION, CONSISTENCY, COMPACTION, SUBGRADE CONDITION, ETC., ARE IN ACCORDANCE CATIONS.

R SHALL USE SUITABLE METHODS TO CONTROL DUST AND DIRT CAUSED BY THE DEMOLITION ACTIVITY.

CLEARED MATERIAL AND DEBRIS SHALL NOT BE ALLOWED.

TON AND SEDIMENT CONTROL MEASURES AROUND AREAS OF DEMOLITION SHALL BE PROPERLY INSTALLED AND SHALL FUNCTION TO INITIALIZATION OF DEMOLITION ACTIVITIES.

ED THAT HAZARDOUS MATERIALS WILL BE ENCOUNTERED IN THE WORK. IF FOUND ON SITE, SUCH MATERIALS SHALL BE REMOVED BY A DOUS MATERIALS CONTRACTOR. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IF HAZARDOUS MATERIALS ARE ENCOUNTERED.

#### G MEASURES & WASTE DISPOSAL

SHALL REFER TO THE EPSC PLANS, NOTES AND DETAILS FOR ADDITIONAL NOTES AND REQUIREMENTS RELATED TO GOOD EASURES AND WASTE DISPOSAL.

PROHIBITED UNLESS IT IS SPECIFICALLY ALLOWED BY LAW. IF ALLOWED, NATURAL VEGETATION, TREES, AND UNTREATED LUMBER LY MATERIALS THAT CAN BE OPEN BURNED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE STATE AND RIOR TO ANY BURNING.

TE VEGETATION AND TREES BY CHIPPING THEM INTO MULCH IS PREFERABLE TO OPEN BURNING. THIS MULCH MAY BE USED AS AN ILIZATION MEASURE WHERE APPROPRIATE.

EARTH, ROCK, ASPHALT, CONCRETE, ETC.) NOT REQUIRED FOR THE CONSTRUCTION OF THE PROJECT WILL BE DISPOSED OF BY THE ACTS TO WATERS OF THE STATE/U.S. SHALL BE AVOIDED IF POSSIBLE. IF UNAVOIDABLE, THE CONTRACTOR WILL OBTAIN ANY AND ALL ITS INCLUDING, BUT NOT LIMITED TO NPDES, AQUATIC RESOURCES ALTERATION PERMIT(S), AND CORPS OF ENGINEERS SECTION 404 DSE OF WASTE MATERIALS.

ND STAGING AREAS SHALL NOT AFFECT ANY WATERS OF THE STATE/U.S. UNLESS THESE AREAS ARE SPECIFICALLY COVERED BY ERMITS, OBTAINED SOLELY BY THE CONTRACTOR. THE CONTRACTOR SHALL REVIEW ALL EXISTING PERMITS TO ENSURE THAT WORK AT DOES NOT EXCEED EXPIRATION DATES. IF WORK IS GOING TO BE CONTINUED AFTER EXPIRATION DATES, THE CONTRACTOR SHALL INEER TO COMMENCE PERMIT RENEWAL PROCESS.

### AND SEDIMENT CONTROL NOTES

SHALL REFER TO THE EPSC PLANS AND DETAILS FOR ADDITIONAL NOTES AND REQUIREMENTS RELATED TO EROSION AND SEDIMENT

MENT CONTROL MEASURES TO BE SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE TENNESSEE DEPARTMENT OF CONSERVATION EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

ITROLS SHALL BE CHECKED AND, REPAIRED AS NECESSARY, BEFORE THE NEXT RAIN EVENT; BUT IN NO CASE MORE THAN SEVEN DAYS **IDENTIFIED** 

MENT ACCUMULATIONS SHALL BE REMOVED DAILY. OFFSITE ACCUMULATIONS DEPOSITED ON PRIVATE PROPERTY SHALL BE REMOVED EED UPON BY THE CONTRACTOR AND THE ADJACENT LAND OWNER(S).

VITHIN 14 DAYS AND STEEP SLOPES EQUAL TO OR GREATER THAN 3:1 WITHIN 7 DAYS.

L PROVIDE AN AREA FOR CONCRETE WASH DOWN AND EQUIPMENT FUELING. CONTRACTOR TO COORDINATE EXACT LOCATION WITH RECONSTRUCTION MEETING. CONTROL OF OTHER SITE WASTES SUCH AS DISCARDED BUILDING MATERIALS, CHEMICALS, LITTER, AND THAT MAY CAUSE ADVERSE IMPACTS TO WATER QUALITY IS ALSO REQUIRED BY THE CONTRACTOR.

E LOCATIONS AREA APPROXIMATE.

ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES.

G OR GRADING SHALL BEGIN UNTIL ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED.

NTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE. ADDITIONAL EROSION DNTROL MEASURES SHALL BE INSTALLED BY THE CONTRACTOR IF DEEMED NECESSARY BY ON SITE INSPECTION.

JCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE TEMPORARILY SEEDED.

L ADHERE TO THE EPSC PLAN PREPARED FOR THIS PROJECT. SEE NOTE 5, PERMITS, PLANS & RECORDS SECTION.

LINCLUDE CLEARING AND GRUBBING, STRIPPING AND STOCKPILING TOPSOIL, MASS GRADING, EXCAVATION, FILLING, UNDER CUT AND REQUIRED, AND COMPACTION.

BACKFILL UNDERCUT AREAS WITH SUITABLE MATERIAL AND COMPACT AS RECOMMENDED BY THE SPECIFICATIONS.

VED SHALL BE STABILIZED WITH SEED AND MULCH, UNLESS NOTED OTHERWISE.

MATERIALS SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE IN ACCORDANCE WITH ALL LOCAL AND STATE CODES IREMENTS.

DISTURBED OUTSIDE LIMITS OF CONSTRUCTION DURING THE LIFE OF THIS PROJECT SHALL BE REPAIRED BY THE CONTRACTOR AT HIS

SHALL NOT DISPOSE OF ANY MATERIAL EITHER ON OR OFF STATE-OWNED R.O.W. IN A REGULATORY FLOODWAY OR FLOODPLAIN AS EDERAL EMERGENCY MANAGEMENT AGENCY WITHOUT APPROVAL BY SAME. ALL MATERIAL SHALL BE DISPOSED OF IN UPLAND REAS AND ABOVE ORDINARY HIGH WATER OF ANY ADJACENT WATERCOURSE. THIS DOES NOT ELIMINATE THE NEED TO OBTAIN ANY OR PERMITS THAT MAY BE REQUIRED BY ANY OTHER FEDERAL, STATE OR LOCAL AGENCY.

N ON PIPING ARE HORIZONTAL DISTANCES FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE, UNLESS OTHERWISE NOTED. SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE INSTALLATION, INSPECTION, TESTING AND FINAL ACCEPTANCE OF ALL

R FACILITIES CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH ALL APPLICABLE REGULATING AGENCIES CONCERNING PECTION AND APPROVAL OF THE STORMWATER CONSTRUCTION.

FACILITIES, INCLUDING COLLECTION AND CONVEYANCE STRUCTURES SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS INCLUDING, BUT NOT LIMITED TO, TDOT STANDARD DRAWINGS AND CONSTRUCTION SPECIFICATIONS FOR RUCTION.

#### TION NOTES

M THESE NOTES OR PLAN SHEETS WILL BE PERMITTED EXCEPT UPON WRITTEN PERMISSION FROM THE ENGINEER. THE ENGINEER IS UDGE AS TO INTERPRETATION OF THE NOTES AND FIGURES. WHENEVER THE WORD "OWNER" IS USED HEREIN, IT SHALL MEAN CITY OF AND WHEREVER THE WORD "ENGINEER" IS USED HEREIN, IT SHALL MEAN CIVIL AND ENVIRONMENTAL CONSULTANTS, INC. (CEC).

SHALL COORDINATE WITH THE OWNER FOR LOCATION, MATERIAL & EQUIPMENT STAGING AREA(S). THE CONTRACTOR SHALL REPLACE "STAGING AREAS" TO EQUAL CONDITIONS, WHICH EXISTED PRIOR TO THE TIME OF BEGINNING CONSTRUCTION. IN ADDITION, ALL BY THE CONTRACTOR'S OPERATION SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION.

DIA	DIAMETER
NTS	NOT TO SCALE
UG	UNDERGROUND
SAN	SANITARY SEWER
WTR	WATER
PVC	POLYVINYL CHLORIDE
MTEMC	MIDDLE TENNESSEE ELECTRIC MEMBERSHIP COP
EPSC	EROSION PREVENTION AND SEDIMENT CONTROL
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION S
SPCC	SPILL PREVENTION, CONTROL AND COUNTERMEA
EP	EDGE OF PAVEMENT
FC	FACE OF CURB
FOG	FACE OF GUTTER
OC	ON CENTER
LP	LOW POINT

ABBREVIATIONS WITHIN CONSTRUCTION PLANS

PUDE PUBLIC UTILITY AND DRAINAGE EASEMENT

TDOT TENNESSEE DEPARTMENT OF TRANSPORTATION

HIGH POINT HP EX EXISTING

TYPICA

REFERENCE

REF

DIA

CONT CONTINUOUS MBSL MINIMUM BUILDING SETBACK LINE

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ERSHIP CORPORATION MINATION SYSTEM UNTERMEASURES

0 SCOPE OF WORK	1.5.1 ENGINEER
1 <u>GENERAL</u> 1.1.1 WORK COVERED IN THIS TECHNICAL SPECIFICATION INCLUDES THE CONSTRUCTION OF REINFORCED AND UNREINFORCED CONCRETE PIERS, AND SITE EARTHWORK TO STABILIZE A SLOPE BEHIND A RESIDENTIAL HOME	CIVIL & ENVIRONMENTAL CONSULTANTS, INC. (CEC) 117 SEABOARD LANE, SUITE E-100 FRANKLIN, TN 37067 (615)- 333-7797
ON MARSHALL GREENE CIRCLE IN GOODLETTSVILLE, SUMNER COUNTY, TENNESSEE. THE FOLLOWING PRESENTS THE PRIMARY TYPES OF ACTIVITIES ASSOCIATED WITH THIS WORK:	1.5.2 <u>OWNER</u> CITY OF GOODLETTSVILLE
<ul> <li>LAYOUT;</li> <li>DRILLING OF PIERS;</li> <li>CONCRETE AND REINFORCEMENT STEEL INSTALLATION;</li> <li>EARTHWORK:</li> </ul>	117 MEMORIAL DRIVE GOODLETTSVILLE, TN 37072 (615) 851-2200
<ul> <li>DRAINAGE CHANNEL</li> <li>MATERIALS HANDLING (INCLUDING HAULING, DISPOSAL, ETC.);</li> <li>TEMPORARY EROSION AND SEDIMENT CONTROL; AND</li> </ul>	2.0 LAYOUT AND SITE PREPARATION 2.1 GENERAL
SITE RESTORATION.     THE CONTRACTOR MAY PROPOSE ALTERNATE CONSTRUCTION METHODS FOR	2.1.1 <u>DESCRIPTION</u>
APPROVAL OR REJECTION BY THE OWNER AND/OR CIVIL & ENVIRONMENTAL CONSULTANTS, INC. (CEC).	2.1.1.1 THE CONTRACTOR IS RESPONSIBLE FOR ALL SITE LAYOUT NECESSARY TO COMPLETE THE WORK.
1.1.2 THIS TECHNICAL SPECIFICATION INCLUDES THE FURNISHING OF ALL PERMITS, LABOR, MATERIALS, EQUIPMENT, TRAFFIC CONTROL, SERVICES AND OPERATIONS REQUIRED TO COMPLETE THE INSTALLATION OF ALL WORK AS INDICATED ON AND IN THE CONTRACT DRAWINGS AND TECHNICAL SPECIFICATIONS	2.1.1.2 DEFINITION: THE TERM "SITE PREPARATION," AS USED HEREIN, INCLUDES REMOVAL OF ALL EXISTING OBJECTS (INCLUDING SOIL, PAVI ETC.) PLUS SUCH OTHER WORK AS IS DESCRIBED IN THIS SE
2 <u>SECURITY, SITE SAFETY AND GOOD HOUSEKEEPING</u>	OF THESE SPECIFICATIONS.
1.2.1 EVERY EMPLOYEE SHALL BE ADEQUATELY TRAINED TO PERFORM HIS JOB IN A SAFE AND EFFICIENT MANNER. EMPLOYEES WILL <u>NOT</u> BE PERMITTED TO SMOKE WITHIN THE WORK AREA.	IN ADDITION TO COMPLYING WITH ALL PERTINENT CODES AND REGULATIONS, COMPLY WITH THE REQUIREMENTS OF ALL INSURAN CARRIERS PROVIDING COVERAGE FOR THIS WORK.
1.2.2 IDENTIFY THOSE AREAS AND THE TYPE OF HOUSEKEEPING PRACTICES THAT SHOULD APPLY TO REDUCE THE POSSIBILITY OF EXCESS DUST, DIRT, ACCIDENTAL SPILLS AND SAFETY HAZARDOUS TO WORKERS AND VISITORS.	2.1.3 JOB CONDITIONS
EXAMPLES OF GOOD HOUSEKEEPING INCLUDE: LIMITING SOIL AND DUST TO THE WORK AREA, NEAT AND ORDERLY STORAGE OF CHEMICALS, PROMPT REMOVAL OF SMALL SPILLAGE, REGULAR REFUSE PICKUP AND	2.1.3.1 DUST CONTROL:
DISPOSAL, ETC. ALL WORK SHOULD BE PERFORMED IN SUCH A MANNER SO AS NOT TO GENERATE EXCESS MESS/DEBRIS. THE CONSTRUCTION AREA SHALL BE CLEANED AT THE FINISH OF CONSTRUCTION ACTIVITIES <u>EVERY</u> DAY.	THE WORK AREA DURING PERFORMANCE OF THE WORK OF SECTION. THOROUGHLY MOISTEN ALL SURFACES AS REQU TO PREVENT DUST BEING A NUISANCE.
3 CODES AND STANDARDS	2.1.3.2 PROTECTION: USE ALL MEANS NECESSARY TO PROTECT ALL EXISTING FEA
1.3.1 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS • A 615 - SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR	ROADWAY, STREAM CHANNEL, ETC., IN THE EVENT OF DAMA IMMEDIATELY NOTIFY THE ENGINEER/OWNER.
CONCRETE REINFORCEMENT.	
• <u>C 150</u> - SPECIFICATION FOR PORTLAND CEMENT.	LOCATED BEFORE SITE CLEARING.
$\cdot$ <u>C 260</u> - SPECIFICATION FOR AIR-ENTRAINING ADMIXTURES FOR CONCRETE.	PREVENTION AND SEDIMENT CONTROL MEASURES ARE IN P
<ul> <li>C 494 - STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE.</li> </ul>	2.2 MATERIALS
<ul> <li><u>C 778</u> - STANDARD SAND.</li> <li><u>D 422-63 - PARTICLE SIZE ANALYSIS OF SOULS (2007)</u></li> </ul>	2.2.1 <u>EXPLOSIVES</u> THE LISE OF EXPLOSIVES IS NOT PERMITTED
<ul> <li><u>D 698-12</u> - MOISTURE DENSITY RELATIONS OF SOILS AND SOIL-AGGREGATE MIXTURES, USING 5.5 LBS. (2.49 KG.) RAMMER AND 12-INCH (304.8 MM) DROP.</li> </ul>	2.2.2 OTHER MATERIALS ALL OTHER MATERIALS NOT SPECIFICALLY DESCRIBED BUT REQUIR
D 1557-12 - STANDARD TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFECT.     D6938-10 STANDARD TEST METHOD FOR IN-PLACE DENSITY AND WATER	PROPER COMPLETION OF THE WORK OF THIS SECTION SHALL BE A SELECTED BY THE CONTRACTOR AND SUBJECT TO THE APPROVAL ENGINEER. 2.3 METHODS
CONTENT OF SOIL AND SOIL-AGGREGATE BY NUCLEAR METHODS (SHALLOW DEPTH).	2.3.1 <u>PREPARATION</u>
<ul> <li>D 4253-00 - STANDARD TEST METHODS FOR MAXIMUM INDEX DENSITY AND UNIT WEIGHT OF SOILS USING A VIBRATORY TABLE.</li> </ul>	
<ul> <li><u>D 4254-00</u> - STANDARD TEST METHODS FOR MINIMUM INDEX DENSITY AND UNIT WEIGHT OF SOILS AND CALCULATION OF RELATIVE DENSITY.</li> <li>D 4318-10 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS.</li> </ul>	2.3.1.2 SITE INSPECTION:
1.3.2 CSI REFERENCES FOR STRUCTURAL STEEL CONSTRUCTION	A. PRIOR TO ALL WORK OF THIS SECTION, THE CONTRACTO CAREFULLY INSPECT THE ENTIRE SITE AND ALL OBJECTS/MATERIALS DESIGNATED TO BE REMOVED AND PRESERVED.
<ul> <li>CSI DOCUMENT 05120 "STRUCTURAL STEEL FOR BUILDINGS".</li> </ul>	B. LOCATE ALL EXISTING ACTIVE UTILITY LINES TRAVERSING SITE AND DETERMINE THE REQUIREMENTS FOR THEIR PROTECTION.
<ul> <li>CSI DOCUMENT 05141 "STRUCTURAL STEEL WELDING FOR BUILDINGS".</li> </ul>	C. IDENTIFY SITE ACCESS AND CONFIRM ACCESS RESTRICT WITH OWNER.
CSI DOCUMENT 05202 "STEEL JOINTS, STANDARD".	2.3.1.3 CLARIFICATION:
CSI REFERENCES FOR CONCRETE CONSTRUCTION     CSI DOCUMENT 03210 "STEEL BAR AND WELDED WIRE FABRIC	A. THE CONTRACT DRAWINGS DO <b>NOT</b> SHOW ALL OBJECTS PROPERTY BOUNDARIES, EXISTING FEATURES AND UTILIT THE SITE.
<ul> <li>REINFORCING".</li> <li>CSI MONOGRAPH 03M304 "CONVEYING AND PLACING CONCRETE".</li> </ul>	B. BEFORE COMMENCING THE WORK OF THIS SECTION, VER WITH THE OWNER AND ENGINEER ALL OBJECTS TO BE R AND ALL OBJECTS TO BE PRESERVED.
<ul> <li>CSI MONOGRAPH 03M351 "EXPOSED AGGREGATE CONCRETE, CAST-IN-PLACE".</li> </ul>	2.3.1.4 SCHEDULING:
<ul> <li>CSI MONOGRAPH 03M420 "PRECAST STRUCTURAL CONCRETE".</li> <li>CSI DOCUMENT 03310 "CONCRETE".</li> </ul>	A. SCHEDOLE ALL WORK IN A CAREFOL MAINER WITH ALL NECESSARY CONSIDERATION FOR NEARBY RESIDENTS A PROPERTY OWNERS. WORK HOURS SHALL BE BETWEEN AND SUNSET MONDAY THROUGH FRIDAY, BETWEEN 9 A.I P.M. SATURDAY, AND 12 P.M. AND 6 P.M. SUNDAY, UNLES
1.3.4 <u>OTHER REFERENCES</u> • "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK," PUBLICATION ACI 247-68 OF THE AMERICAN CONCRETE	B. CONTRACTOR SHALL PROVIDE CITY WITH A CONSTRUCTI SCHEDULE FOR APPROVAL PRIOR TO COMMENCEMENT WORK.
<ul> <li>"FORMWORK FOR CONCRETE," SPECIAL PUBLICATION NO. 4, 6TH EDITION, ACI COMMITTEE 347.</li> </ul>	2.3.1.5 PROTECTION OF UTILITIES: PRESERVE IN OPERATING CONDITION ALL ACTIVE UTILITIES TRAVERSING THE SITE AND DESIGNATED TO REMAIN
<ul> <li>"SPECIFICATIONS FOR DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS," AMERICAN INSTITUTE OF STEEL CONSTRUCTION.</li> </ul>	2.4 <u>PAY ITEMS</u> ITEM 001, "SITE LAYOUT AND PREPARATION," PER LUMP SUM.
<ul> <li>"CODE FOR WELDING IN BUILDING CONSTRUCTION," AMERICAN WELDING SOCIETY.</li> </ul>	3.0 EARTHWORK
"MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES," PUBLICATION ACI 315-65 OF THE AMERICAN CONCRETE INSTITUTE.	3.1 <u>GENERAL</u> WORK COVERED IN THIS SECTION SHALL CONSIST OF FURNISHING THE L
<ul> <li>"STRUCTURAL CONCRETE FOR BUILDINGS," PUBLICATION ACI 301-66 OF THE AMERICAN CONCRETE INSTITUTE.</li> <li>"BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE," AMERICAN CONCRETE INSTITUTE (ACI 318).</li> </ul>	MATERIALS, TOOLS, EQUIPMENT, INCIDENTALS AND SERVICES NECESSAF PERFORM THE WORK AS SHOWN ON AND IN THE CONTRACT DRAWINGS A DESCRIBED IN THESE CONSTRUCTION SPECIFICATIONS.
2015 INTERNATIONAL BUILDING CODE.	

- 3.2 MATERIALS
  - 3.2.1 UNSATISFACTORY MATERIAL IS DEFINED AS MATERIAL POSSESSING ONE OR MORE OF THE FOLLOWING CHARACTERISTICS: SOFT, WET, DRGANIC, ACIDIC, PLASTIC (I.E., PLASTICITY INDEX GREATER THAN 20) HIGHLY FRACTURED, FRIABLE AND PUMPS OR RUTS EXCESSIVELY.
- 3.2.2 STRUCTURAL FILL IS DEFINED AS DRY, CLEAN SOILS FREE OF UNSATISFACTORY MATERIAL AND MEETING THE CRITERIA OF UNIFIED SOIL CLASSIFICATION SYSTEM GW, GC, GM, GP, SW, SP, SM, SC OR CL
- 3.2.3 **GRANULAR MATERIAL** IS DEFINED AS CLEAN, DURABLE, AGGREGATE MEETING THE CRITERIA OF AASHTO NO. 1 (OR SIMILAR GRADATION) MATERIALS. PROCESSED, NON-EXPANSIVE SLAG IS PERMITTED FOR USE. 3.2.4 **DRAINAGE MATERIAL** IS DEFINED AS CLEAN, DURABLE, AGGREGATE
- MEETING THE CRITERIA OF AASHTO NO. 57 (OR SIMILAR GRADATION) MATERIALS. PROCESSED, NON-EXPANSIVE SLAG IS PERMITTED FOR USE. 3.3 METHODS
- 3.3.1 GRADING OPERATIONS SHALL NOT BE STARTED IN AN AREA UNTIL THE APPROPRIATE EROSION PREVENTION & SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND APPROVED BY THE OWNER.
- 3.3.2 AREAS TO BE GRADED, SHALL HAVE UNIFORM LEVELS OR SLOPES BETWEEN FINISHED ELEVATIONS. GRADE STAKES SHALL BE SET AT BREAKS IN GRADE. ALONG SWALES AND AS REQUIRED FOR PROPER GRADING OF THE CONSTRUCTION SITE. BEFORE COMMENCING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL STAKE OUT CONTRACT LIMIT LINES AS REQUIRED TO PERFORM THE WORK. THE CONTRACTOR SHALL MAINTAIN EXISTING BASE LINES AND BENCH MARKS AND SHALL ESTABLISH AND MAINTAIN NEW BENCH MARKS REQUIRED FOR HIS OPERATIONS.
- 3.3.3 THE CONTRACTOR SHALL REPAIR AND REESTABLISH GRADES IN SETTLED, ERODED, RUTTED, OR OTHERWISE DAMAGED AREAS. IN DAMAGED COMPACTED AREAS, THE CONTRACTOR SHALL SCARIFY THE SURFACE, RE-SHAPE AND COMPACT TO THE REQUIRED DENSITY PRIOR TO FURTHER CONSTRUCTION.
- 3.3.4 THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, CROWN AND DITCHES ON ALL EXCAVATIONS AND EMBANKMENTS TO ENSURE SATISFACTORY DRAINAGE AT ALL TIMES.
- 3.3.5 MATERIAL HANDLING AND PLACEMENT METHODS SHALL BE CONDUCTED TO MINIMIZE DISTURBANCE OUTSIDE OF THE LIMITS OF GRADING ACTIVITIES AND PREVENT DAMAGE/INCONVENIENCE TO THE ADJACENT RESIDENCES.
- 3.4 <u>CLEARING</u>

- 3.4.1 CLEARING AND GRUBBING SHALL CONSIST OF THE REMOVAL, HAULING AND DISPOSAL OF ALL TREES, TREE ROOT SYSTEMS, BRUSH, STUMPS, DEBRIS AND OBJECTIONABLE MATERIALS WITHIN THE PROPOSED EARTHWORK GRADING CONSTRUCTION AREA. CLEARING AND GRUBBING SHALL BE CONFINED TO WITHIN THE WORK AREA AS SHOWN ON THE CONTRACT DRAWINGS AND/OR AS DIRECTED BY THE ENGINEER/OWNER.
- 3.4.2 THE CONTRACTOR SHALL AVOID CUTTING OR INJURING TREES AND VEGETATION OUTSIDE OF THE WORK AREA WITHOUT THE OWNER'S PERMISSION.
- 3.4.3 TOPSOIL AND/OR OTHER SOILS SUITABLE FOR USE IN REVEGETATION SHALL BE STRIPPED AND STOCKPILED ON SITE AS DIRECTED BY THE OWNER. TOPSOIL SHALL BE STOCKPILED SEPARATELY FROM ALL OTHER SOIL MATERIALS. TOPSOIL SHALL BE DEFINED AS ALL ORGANIC-BASED SOIL
- 3.5 EXCAVATION
- 3.5.1 ALL WORK ASSOCIATED WITH EXCAVATION WILL BE PERFORMED AS PART OF THIS SECTION.
- 3.5.2 IF EXCAVATION ENCOUNTERS MATERIALS SUCH AS THOSE DEFINED IN SECTION 3.2.1. THE UNSATISFACTORY MATERIAL WILL BE OVEREXCAVATED UNTIL COMPETENT MATERIAL IS OBTAINED OR AS DETERMINED BY THE ENGINEER. THE OVEREXCAVATION SHALL BE BACKFILLED WITH STRUCTURAL FILL AND/OR GRANULAR MATERIAL AS DESCRIBED IN SECTION 3.2 TO ACHIEVE THE DESIRED BASE ELEVATION.
- 3.5.3 ANY DAMAGE TO THE EXCAVATION GRADES BELOW THE LINES AND GRADES SHOWN ON THE CONTRACT DRAWINGS, DUE TO NEGLIGENCE ON THE PART OF THE CONTRACTOR. SHALL BE REPLACED WITH STRUCTURAL FILL BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE
- 3.5.4 ALL EXCAVATED MATERIAL NOT RE-USED DURING CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
- 3.6 FILL PLACEMENT
- 3.6.1 STRUCTURAL FILL SHALL BE PLACED IN LOOSE HORIZONTAL LIFTS OF ABOUT 8 INCHES AND COMPACTED TO AT LEAST 98 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AT  $\pm$  2 PERCENT OF THE OPTIMUM MOISTURE CONTENT.
- 3.6.2 GRANULAR AND DRAINAGE MATERIALS SHALL BE PLACED IN LOOSE HORIZONTAL LIFTS OF ABOUT 8 INCHES AND COMPACTED TO AT LEAST 75 PERCENT RELATIVE DENSITY (AND/OR THE POINT OF NON-MOVEMENT DURING PROOFROLLING).
- 3.6.3 FIELD IN-PLACE DENSITY SHALL BE DETERMINED BY THE OWNER'S QUALITY ASSURANCE FIRM.
- 3.6.4 PROOFROLLING OF THE SUBGRADE AND OTHER MATERIALS SHALL BE PERFORMED PRIOR TO FILL PLACEMENT OR PAVEMENT CONSTRUCTION AND UNDER DIRECTION OF THE ENGINEER OR DESIGNATED CQA CONSULTANT USING LOADED DUMP TRUCKS OR SIMILAR CONSTRUCTION EQUIPMENT. PROOFROLLED SURFACES SHALL NOT BE OBSERVED TO RUT, SETTLE OR DEFORM ELASTICALLY UNDER THE WEIGHT OF THE EQUIPMENT
- 3.6.5 FROZEN FILL MATERIAL SHALL NOT BE PLACED NOR SHALL FILL BE PLACED UPON FROZEN MATERIALS. PREVIOUSLY FROZEN MATERIALS SHALL BE REMOVED BEFORE NEW FILL MATERIAL IS PLACED. NO FILL MATERIAL SHALL BE PLACED, SPREAD, OR COMPACTED WHILE THE GROUND OR FILL IS FROZEN OR THAWING OR DURING UNFAVORABLE WEATHER CONDITIONS.
- 3.6.6 UNLESS OTHERWISE DIRECTED, FILL LAYERS SHALL BE OVERLAIN AS SOON AS POSSIBLE AFTER THE WORK IS INSPECTED, TESTED AS REQUIRED AND ACCEPTED, AND PERMISSION TO PLACE THE NEXT LAYER OF FILL HAS BEEN GIVEN BY THE CQA CONSULTANT/ENGINEER.
- 3.6.7 THE CONTRACTOR SHALL GRADE THE LIFTS TO MAINTAIN POSITIVE DRAINAGE TO PREVENT PONDING OF SURFACE WATER. FOLLOWING RAINFALL. THE CONTRACTOR SHALL REMOVE ALL SATURATED FILL BEFORE PLACING ADDITIONAL FILL MATERIAL
- 3.6.8 AT ALL TIMES. THE CONTRACTOR SHALL PREVENT GROUND AND SUBSURFACE WATER FROM FLOWING INTO FILL AREAS AND FROM COLLECTING AND PONDING. IF NECESSARY. THE CONTRACTOR SHALL INSTALL TEMPORARY DIVERSIONS FROM ADJACENT AREAS TO CHANNEL WATER AWAY FROM FILL AREAS.
- 3.6.9 THE COMPLETED SURFACE SHALL BE SMOOTH, FIRM AND FREE OF LOOSE DEBRIS. ANY DAMAGED AREAS OF THE COMPACTED STRUCTURAL FILL SHALL BE EXCAVATED AND REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
- 3.6.10 UPON COMPLETION OF THE DESIGN GRADES THE CONTRACTOR SHALL SURVEY THE SURFACE TO VERIFY THAT THE LAYER HAS BEEN CONSTRUCTED TO THE DESIGN LINES, GRADES AND THICKNESS INDICATED ON THE CONTRACT DRAWINGS. SURVEY TOLERANCE SHALL BE ± 0.1 FEET FROM DESIGN GRADE.

- 3.7 QUALITY CONTROL
  - 3.7.1 THE EXCAVATION, OVER-EXCAVATION, PLACEMENT AND COMPACTION OF ALL MATERIALS SHALL BE VISUALLY MONITORED BY THE CQA CONSULTANT/ENGINEER.
- 3.8 SUBMITTALS

NONE.

3.9 MEASUREMENT AND PAYMENT

PAYMENT FOR THE EARTHWORK SHALL BE ON A LUMP SUM BASIS FOR THE FOLLOWING ITEMS PLUS ALL OTHER ACTIVITIES INCIDENTAL TO EARTHWORK CONSTRUCTION:

- SITE CLEARING TEMPORARY ACCESS ROAD CONSTRUCTION
- EARTHWORK (CUT AND FILL) OPERATIONS TO ACHIEVE SPECIFIED CONTOURS
- DELIVERY AND PLACEMENT OF TOPSOIL LOADING, HAULING, CONDITIONING, PLACING AND COMPACTING STRUCTURAL FILL TO THE SPECIFIED
- MOISTURE-DENSITY CRITERIA TO THE DESIGN CONTOURS;
- HAULING AND DISPOSAL OF EXCESS SOIL MATERIALS.
- ITEM 002, "EARTHWORK," PER LUMP SUM.
- 4.0 CONCRETE PIERS

3.10 PAY ITEMS

- 4.1 GENERAL
- 4.1.1 RELATED DOCUMENTS:
  - 4.1.1.1 CONSTRUCTION DRAWINGS PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. (CEC) FOR THIS PROJECT.
- 4.1.2 SUMMARY:
  - 4.1.2.1 THE WORK SHALL CONSIST OF THE CONSTRUCTION AND INSTALLATION OF REINFORCED AND UNREINFORCED CONCRETE PIERS AT THE PROJECT SITE AT THE LOCATION, LINES, AND
    - GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. THE CONCRETE PIER CONSTRUCTION SHALL CONSIST OF: FURNISHING AND INSTALL PIERS IN ACCORDANCE WITH THE
    - CONSTRUCTION DRAWINGS.
    - EXCAVATION, PLACEMENT, AND COMPACTION OF SOIL AND DRAINAGE BACKFILL AROUND, ATOP AND BEHIND THE
    - CONCRETE PIERS AS SHOWN ON THE CONSTRUCTION DRAWINGS AND REMOVAL OF AUGURED SPOILS FROM SITE.
- 4.1.3 DEFINITIONS:
  - 4.1.3.1 DESIGN ENGINEER CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
- 4.1.3.2 QUALITY ASSURANCE FIRM THE OWNER WILL RETAIN A FIRM TO PROVIDE OVERSIGHT AND TESTING DURING THE CONCRETE PIER CONSTRUCTION.
- 4.1.4 CONSTRUCTION SITE SURVEY:
- 4.1.4.1 BEFORE BIDDING THE WORK, THE CONTRACTOR SHALL REVIEW THE AVAILABLE SITE TOPOGRAPHIC AND SUBSURFACE INFORMATION AND VISIT THE SITE TO ASSESS THE SITE GEOMETRY, EQUIPMENT ACCESS CONDITIONS, INSTALLATION AND CONSTRUCTION REQUIREMENTS. LOCATION OF EXISTING STRUCTURES, UTILITIES, AND ABOVE-GROUND FACILITIES AND CONFIRM THE EXISTING TOPOGRAPHY DEPICTED ON SHEET C100
- 4.1.4.2 THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING AND VERIFYING THE LOCATION OF ALL UTILITIES SHOWN ON THE PLANS, AND ANY UTILITIES NOT SHOWN ON THE PLANS, PRIOR TO STARTING THE WORK. MAINTAIN UNINTERRUPTED SERVICE FOR THOSE UTILITIES DESIGNATED TO REMAIN IN SERVICE THROUGHOUT THE WORK. NOTIFY THE ENGINEER OF ANY UTILITY LOCATIONS DIFFERENT FROM THOSE SHOWN ON THE PLANS THAT MAY REQUIRE RELOCATIONS OR DESIGN MODIFICATIONS. SUBJECT TO THE ENGINEER'S APPROVAL ADDITIONAL COST TO THE CONTRACTOR DUE TO DESIGN MODIFICATIONS RESULTING FROM UTILITY LOCATIONS DIFFERENT FROM THOSE SHOWN ON THE PLANS, WILL BE PAID AS EXTRA WORK.
- 4.1.4.3 PRIOR TO THE START OF ANY CONSTRUCTION OR INSTALLATION ACTIVITY, THE CONTRACTOR AND OWNER SHALL JOINTLY INSPECT THE SITE TO OBSERVE AND DOCUMENT THE PRE-CONSTRUCTION CONDITION OF THE SITE, INCLUDING EXISTING GRADES, STRUCTURES AND FACILITIES. DURING CONSTRUCTION AND CONCRETE PIER INSTALLATION, THE CONTRACTOR SHALL OBSERVE THE CONDITIONS ADJACENT TO WORK AREA AND OTHER APPURTENANCES ON A DAILY BASIS FOR SIGNS OF GROUND MOVEMENT. IMMEDIATELY NOTIFY THE ENGINEER IF ADDITIONAL SIGNS OF MOVEMENT ARE OBSERVED F THE ENGINEER DETERMINES THAT THE MOVEMENTS EXCEED THOSE ANTICIPATED AND REQUIRE CORRECTIVE ACTION, THE CONTRACTOR SHALL TAKE CORRECTIVE ACTIONS NECESSARY TO STOP THE MOVEMENT OR PERFORM REPAIRS. WHEN DUE TO THE CONTRACTOR'S METHODS OR OPERATIONS OR FAILURE TO FOLLOW THE SPECIFIED/APPROVED CONSTRUCTION SEQUENCE, AS DETERMINED BY THE ENGINEER. THE COSTS OF PROVIDING CORRECTIVE ACTIONS WILL BE BORNE BY THE CONTRACTOR. WHEN DUE TO DIFFERING SITE CONDITIONS, AS DETERMINED BY THE ENGINEER, THE COSTS OF PROVIDING CORRECTIVE ACTIONS WILL BE PAID AS EXTRA WORK.



	4.2	WORK SCC	PE		4.7
н		4.2.1	WORK C LABOR, THE DRI CONCRI CONTRA	COVERED UNDER THIS SECTION SHALL CONSIST OF FURNISHING THE EQUIPMENT, INCIDENTALS AND SERVICES NECESSARY TO COMPLETE ILLING OF NOMINAL DIAMETER AUGER HOLES FOR THE INSTALLATION OF ETE PIERS AND STEEL REINFORCEMENT AS SHOWN ON AND IN THE ACT DRAWINGS AND TECHNICAL SPECIFICATIONS.	5.0
		4.2.2	WORKM	EN QUALIFICATIONS INCLUDE:	5.1
				<ul> <li>PERSONNEL THOROUGHLY TRAINED AND EXPERIENCED IN THE SKILLS REQUIRED; AND</li> </ul>	
				<ul> <li>THE FIELD SUPERVISOR AND THE DRILLING OPERATOR SHALL HAVE AT LEAST 12 MONTHS EXPERIENCE IN THE OPERATION OF THE EQUIPMENT BEING USED.</li> </ul>	
		4.2.3	GENERA	AL OPERATION STANDARDS:	5.2
G			1.2.	THAT ARE ENCOUNTERED IN, OR MAY BE AFFECTED BY, THE WORK. IN THE EVENT ANY EXISTING SUBSURFACE STRUCTURE/UTILITY IS DAMAGED BY THE CONTRACTOR, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER, THE OWNER OF THE UTILITY AND ENGINEER, REPAIR THE DAMAGES AND RESTORE ANY DAMAGED SERVICES IN KIND.	6.0
			4.2.	3.2 AUGER HOLES SHALL BE KEPT DEWATERED, AND PUMPS SHALL BE ATTENDED ON A 24-HOUR BASIS, IF CONDITIONS SO REQUIRE.	6.1
	4.3	METHODS			
		4.3.1	PRIOR T	O COMMENCING DRILLING OPERATIONS.	6.2
		4.3.2	IF AN OE ENGINE	BSTRUCTION IS ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE ER AND OWNER IMMEDIATELY.	
		4.3.3	ALL DRI	LLING SHALL BE PERFORMED USING THE CURRENTLY ACCEPTED CES AND SHALL BE PERFORMED IN A SAFE MANNER.	
		4.3.4	ALL AUC CONTRA	GER HOLES SHALL BE DRILLED TO THE DEPTHS SPECIFIED ON THE ACT DRAWINGS.	
		4.3.5	ADJACE CONCRI	INT AUGER HOLES REQUIRE A MINIMUM OF 24 HOURS TIME FOLLOWING ETE PLACEMENT BEFORE COMMENCEMENT OF ADJACENT EXCAVATION.	6.3
F		4.3.6	PROVISI FOR AU	ONS SHALL BE MADE BY THE CONTRACTOR FOR TEMPORARY CASING GER HOLES THAT DO NOT STAY OPEN.	
		4.3.7	ALL HOL	LES SHALL BE DRILLED TO WITHIN PLUS OR MINUS 0.1 FEET OF THE	
		4.3.8	ALL FINI	SHED AUGER HOLES SHALL BE INSPECTED BY THE ENGINEER PRIOR TO	
		4.3.9	ALL LOC	DSE MATERIAL AND WATER IN QUANTITIES THAT COULD AFFECT	
			CONCRI HOLE AS	ETE STRENGTH SHALL BE REMOVED FROM THE BOTTOM OF THE AUGER S DIRECTED BY THE ENGINEER.	
		4.3.10	EXCAVA NOT BE	TIONS, CASED OR UNCASED, GREATER THAN 5 FEET IN DEPTH SHALL LEFT OPEN FROM ONE WORKING SHIFT TO THE NEXT.	
		4.3.11	IF TEMP OVERSE	ORARY CASING IS USED IN AN AUGER HOLE, THE ENGINEER SHALL E REMOVAL OF THE CASING AND PLACEMENT OF THE CONCRETE.	
_		4.3.12	PLYWOO PROPEF	DD OR OTHER APPLICABLE MATERIALS SHALL BE USED TO COVER RLY CASED, OPEN HOLES LESS THAN 5 FEET IN DEPTH.	
E	4.4	MATER	ALS		
		4.4.1	STEEL F	REINFORCEMENT: REINFORCEMENT BARS: ASTM A 615 GRADE 60 IN ACCORDANCE WITH	
		112	CONCRI	THE CONSTRUCTION DRAWINGS.	
_		7.7.2	4.4.2.1	PORTLAND CEMENT: ASTM C 150, TYPE I, II OR III	
			4.4.2.2	AGGREGATE: ASTM C 33. COMBINED AGGREGATE GRADATION FOR CONCRETE PAVEMENT AND OTHER DESIGNATED CONCRETE SHALL BE 8% - 18% FOR LARGE TOP SIZE AGGREGATES (1½") OR 8% - 22% FOR SMALLER TOP SIZE AGGREGATES (1" OR ¾") RETAINED ON EACH SIEVE BELOW THE TOP SIZE AND ABOVE THE NO. 100 SIEVE. CONCRETE PAVEMENTS SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1½".	
			4.4.2.3 4 4 2 4	WATER/READY MIX CONCRETE: ASTM C 94.	
U				<ul> <li>THAN 0.1 % WATER-SOLUBLE CHLORIDE IONS BY MASS OF CEMENT AND TO BE COMPATIBLE WITH OTHER ADMIXTURES, AS FOLLOWS:</li> <li>WATER-REDUCING ADMIXTURE: ASTM C 494, TYPE A;</li> <li>WATER-REDUCING AND HIGH-RANGE ADMIXTURE: ASTM C494, TYPE F;</li> <li>WATER-REDUCING AND ACCELERATING ADMIXTURE: ASTM C494, TYPE E; AND,</li> </ul>	6.4
				<ul> <li>WATER-REDUCING AND RETARDING ADMIXTURE: ASTM C494, TYPE D.</li> </ul>	7.0 7.1
			4.4.2.5 4.4.2.6	CALCIUM CHLORIDE: THE USE OF CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 0.05% CHLORIDE IONS IS PROHIBITED. CURING MATERIALS:	
				<ul> <li>ABSORPTIVE COVER: AASHTO M182, CLASS 2, BURLAP CLOTH MADE FROM JUTE OR KENAF, WEIGHING APPROXIMATELY 9 OZ./SQ. YD. DRY;</li> <li>MOISTURE-RETAINING COVER: ASTM C 171, POLYETHYLENE FILM OR WHITE BURLAP-POLYETHYLENE SHEET;</li> </ul>	7.2
NA UC:				<ul> <li>WATER: POTABLE;</li> <li>EVAPORATION RETARDER: WATERBORNE, MONOMOLECULAR FILM FORMING, MANUFACTURED FOR APPLICATION TO FRESH CONCRETE;</li> <li>CLEAR SOLVENT-BORNE LIQUID-MEMBRANE-FORMING CURING COMPOUND: ASTM C309, TYPE 1, CLASS B;</li> <li>CLEAR WATERBORNE MEMBRANE-FORMING CURING COMPOUND: ASTM C309, TYPE 1, CLASS B;</li> <li>WHITE WATERBORNE MEMBRANE-FORMING CURING COMPOUND: ASTM C309, TYPE 2, CLASS B;</li> </ul>	
77777		4.4.3	CONCRI	ETE MIXES AND MIXING:	73
a) - TH: 0/24/			4.4.3.1	<ul> <li>CONCRETE MIXES SHALL BE PROPORTIONED ACCORDING TO ACI 211.1R-91 AND ACI 304, WITH THE FOLLOWING PROPERTIES:</li> <li>COMPRESSIVE STRENGTH (28 DAYS) SHALL BE 4,500 PSI (SH-SCC), AND SHALL CONFORM TO THE CHARACTERISTICS OF TDOT STANDARD SPECIFICATIONS SECTION 604.03.B</li> <li>SLUMP FLOW SHALL BE 26±5 INCHES AT TIME OF PLACEMENT.</li> </ul>	1.0
0M( -			4.4.3.2	WITH ASTM C94 AND ASTM C1116.	
7707/c/g):c			4.4.3.3	PROJECT-SITE MIXING SHALL BE APPROVED BY THE OWNER. MIXING SHALL COMPLY WITH REQUIREMENTS AND MEASURE, BATCH, AND MIX CONCRETE MATERIALS AND CONCRETE ACCORDING TO ASTM C94. MIX CONCRETE MATERIALS IN APPROPRIATE DRUM-TYPE BATCH MACHINE MIXER.	7.4
1 5000	4.5	SUBMI	TTALS		
-CUU1.awg?		4.5.1	INFORM DEWATE LEAST C	ATION ON PROPOSED DRILLING EQUIPMENT AND PROPOSED ERING EQUIPMENT SHALL BE SUBMITTED TO THE OWNER/ENGINEER AT ONE WEEK PRIOR TO COMMENCEMENT OF WORK.	
-1047-6//1		4.5.2	shop d The ow Work.	RAWINGS FOR REINFORCED CONCRETE PIERS SHALL BE SUBMITTED TO NER/ENGINEER AT LEAST ONE WEEK PRIOR TO COMMENCEMENT OF	
CE1/10		4.5.3	MIX DES OWNER	IGN FOR REINFORCED CONCRETE PIERS SHALL BE SUBMITTED TO THE /ENGINEER AT LEAST ONE WEEK PRIOR TO COMMENCEMENT OF WORK.	
UNG/CV	4.6				
193-1/8/-CAUD		CONSI AND D CONSI CONSI CONCI	JLTANT/E EPTH IDE JLTANT/E RETE MEI	EFIER CONSTRUCTION SHALL BE VISUALLY MONITORED BY THE CQA ENGINEER TO CONFIRM PIERS ARE INSTALLED TO THE PLAN LIMITS, SIZE ENTIFIED IN THE CONSTRUCTION DRAWINGS. THE CQA ENGINEER SHALL ALSO VERIFY THAT THE REINFORCEMENT AND ET THE PROJECT SPECIFICATIONS.	

7	PAY ITEMS

REVEGETATION

<u>GENERAL</u>

ITEM 003, "CONCRETE PIERS," PER LUMP SUM.

5.0 SUB-DRAINAGE
5.1 GENERAL
5.1.1 WORK COVERED IN THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR MATERIALS, TOOLS, EQUIPMENT, INCIDENTALS AND SERVICES NECESSARY TO COMPLETE THE SUB-DRAINGE OF ALL AREAS DISTURBED OR GRADED ASSOCI WITH THE CONSTRUCTION OF THE CONCRETE PIERS AND SITE EARTHWORK.
5.1.2 PERFORATED PE PIPE AND FITTINGS: ASTM F 667/F, 667M, OR AASHTO M 252, TO CORRUGATED, FOR COUPLED JOINTS. COUPLINGS: MANUFACTURER'S STANDARD, BAND TYPE. PERFORATIONS: PROVIDE PIPE FULLY PERFORATED AROUND ITS PERIMETER.
5.2 PAY ITEMS ITEM 004, "SUB-DRAINAGE," PER LUMP SUM.

6.1.1 WORK COVERED IN THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, INCIDENTALS AND SERVICES NECESSARY TO COMPLETE THE REVEGETATION OF ALL AREAS DISTURBED OR GRADED ASSOC WITH THE CONSTRUCTION OF THE CONCRETE PIERS AND SITE EARTHWORK.
2 <u>MATERIALS</u>
6.2.1 **PERMANENT VEGETATIVE COVER** SHALL BE PROVIDED THROUGH A SEED MIX' MEETING OR EXCEEDING THE REQUIREMENTS DESCRIBED ON THE CONTRACT DRAWINGS.
6.2.2 **MULCHING MATERIAL** SHALL BE STRAW AND/OR HAY MULCH THAT SHALL BE DE FREE FROM WEEDS AND FOREIGN MATTER DETRIMENTAL TO PLANT LIFE. ALTERNATIVELY, THE CONTRACTOR MAY USE HEMLOCK SPECIES WOOD CELLU FIBER, CHIP FORM, FREE OF GROWTH, OR GERMINATION INHIBITING INGREDIEN METHODS
6.3.1 TO THE GREATEST EXTENT POSSIBLE. THE CONTRACTOR SHALL PEVECETATE TO THE CONTRACTOR SHALL PEVECETATE.

- 6.3.1 TO THE GREATEST EXTENT POSSIBLE, THE CONTRACTOR SHALL REVEGETATE T FINISHED OUTSLOPES ON A ROUTINE BASIS TO MINIMIZE EROSION OF THE COMPLETED SLOPE AND TO MINIMIZE THE NEED TO REDRESS COMPLETED ARE
   6.3.2 THE CONTRACTOR SHALL DELIVER SEED MIXTURE IN CEALED CONTRACTOR SHALL SEED CONTRACTOR SEE
- 6.3.2 THE CONTRACTOR SHALL DELIVER SEED MIXTURE IN SEALED CONTAINERS SHO WEIGHT, SEED MIX, YEAR OF PRODUCTION, DATE OF PACKAGING AND LOCATIO PACKAGING. SEED IN DAMAGED PACKAGING IS NOT ACCEPTABLE.
- 6.3.3 THE CONTRACTOR SHALL DELIVER FERTILIZER IN WATERPROOF BAGS SHOWING WEIGHT, CHEMICAL ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER IN DAMAGED PACKAGING IS NOT ACCEPTABLE.
- 6.3.4 THE CONTRACTOR SHALL SEED DIRECTLY ONTO PREPARED BACKFILLED OR REGRADED AREAS. THE CONTRACTOR SHALL NOT APPLY SOIL AMENDMENTS A SAME TIME OR WITH THE SAME MACHINE AS WILL BE USED TO APPLY SEED UNI HYDROSEEDING. SOIL AMENDMENTS SHALL BE MIXED THOROUGHLY INTO AT L THE UPPER 4 INCHES OF SOIL USING DISK OR ROTARY TILLAGE EQUIPMENT, UN HYDROSEEDING IS USED. AFTER APPLICATION OF FERTILIZER, THE SOIL SURFA SHALL BE LIGHTLY WATERED TO AID THE DISSIPATION OF FERTILIZER.
- 6.3.5 THE CONTRACTOR SHALL APPLY SEED AT THE RATE RECOMMENDED IN THE CONTRACT DRAWINGS. THE SEED SHALL BE RAKED IN LIGHTLY. THE CONTRAC SHALL NOT SEED THE AREA IN EXCESS OF THAT WHICH CAN BE MULCHED ON SAME DAY.
- 6.3.6 THE BEST SEEDING RESULTS ARE ATTAINED FROM SEEDINGS DONE FROM APR SEPTEMBER 15.
- 6.3.7 THE CONTRACTOR SHALL NOT SOW SEED OR FERTILIZER IMMEDIATELY FOLLO RAIN, WHEN THE GROUND IS TOO DRY, OR DURING WINDY PERIODS.
- 6.3.8 HYDROSEEDING MAY BE PERFORMED BY THE CONTRACTOR. WHEN APPLYING S LIME, FERTILIZER, OR MULCH MATERIALS WITH THE HYDROSEEDER, DO NOT USI MORE THAN 100 TO 150 POUNDS OF SOLIDS PER 100 GALLONS OF WATER. A LO IS DETRIMENTAL TO THE LEGUME INOCULANT. IF INOCULANT IS IN A SEED, FER' AND LIME SLURRY, IT SHOULD BE USED WITHIN THREE TO FOUR HOURS, OR A F SUPPLY OF INOCULANT SHOULD BE ADDED. WHEN LEGUME IS TO BE INCLUDED SLURRY MIXTURE CONTAINING FERTILIZER, THE AMOUNT OF INOCULANT ADDED THE TANK SHOULD BE FOUR TIMES THE RATE PRESCRIBED BY THE MANUFACTU IT IS PREFERABLE TO HYDROSEED WHEN THE SOIL IS MOIST.
- 6.3.9 FLAT AREAS THAT RECEIVE SEED SHALL BE MULCHED USING THE MATERIALS DESCRIBED IN SECTION 7.2.2 AT A RATE OF 3.0 TONS PER ACRE OR GREATER. C STEEPER SLOPES (GREATER THAN 3H:1V), THE CONTRACTOR SHALL INSTALL AN EROSION CONTROL MAT IN LIEU OF MULCH IN ACCORDANCE WITH MANUFACTU RECOMMENDATIONS.

## 6.4 PAY ITEMS

ITEM 005, "REVEGETATION," PER LUMP SUM.

## FLEXAMAT

GENERAL

A TIED CONCRETE BLOCK MAT WITH TRIPLE LAYERED UNDERLAYMENT. THIS WORK SI CONSIST OF FURNISHING AND PLACING THE SYSTEM IN ACCORDANCE WITH THIS SPECIFICATION AND CONFORMING WITH THE LINES, GRADES, DESIGN, AND DIMENSION SHOWN ON THE PLANS.

## 2 <u>MATERIALS</u>

FLEXAMAT STANDARD IS MANUFACTURED FROM INDIVIDUAL CONCRETE BLOCKS TIED TOGETHER WITH HIGH STRENGTH KNITTED POLYPROPYLENE BI-AXIAL GEOGRID. EACH BLOCK IS TAPERED, BEVELED AND INTERLOCKED AND INCLUDES CONNECTIONS THAT PREVENT LATERAL DISPLACEMENT OF THE BLOCKS WITHIN THE MATS WHEN THEY AF LIFTED FOR PLACEMENT.

TIED CONCRETE BLOCK MAT WITH DOUBLED LAYERED UNDERLAYMENT SHALL BE FLE STANDARD, MANUFACTURED BY MOTZ ENTERPRISES, INC.

7.3 WORK SCOPE

THE WORK PERFORMED, AND MATERIALS FURNISHED IN ACCORDANCE WITH THIS ITEM MEASURED BY THE SQUARE FOOT AS SHOWN ON THE PLANS, COMPLETE IN PLACE, W PAID FOR AT THE UNIT PRICE BID FOR "FLEXAMAT STANDARD". THIS PRICE IS FULL COMPENSATION FOR LOADING AND TRANSPORTING, PLACING CONCRETE BLOCK MAT EXCAVATION AND DISPOSAL; FURNISHING TOPSOIL AND BEDDING; AND EQUIPMENT, L MATERIALS, TOOLS, AND INCIDENTALS.

7.4 <u>METHODS</u>

7.4.1 PROVIDE THE PROPER EQUIPMENT TO PLACE THE MAT THAT WILL NOT DAMAGE MAT MATERIAL OR DISTURB THE SOIL SUBGRADE AND SEED BED.

- 7.4.2 PRIOR TO INSTALLING FLEXAMAT STANDARD, PREPARE THE SUBGRADE AS DETA IN THE PLANS. ALL SUBGRADE SURFACES TO BE SMOOTH AND FREE OF ALL ROO STONES, STICKS, ROOTS, AND OTHER PROTRUSIONS OR DEBRIS OF ANY KIND T WOULD RESULT IN AN INDIVIDUAL BLOCK BEING RAISED MORE THAN 3/4 IN. ABC THE ADJOINING BLOCKS. WHEN SEEDING IS SHOWN ON THE PLANS, PROVIDE SUBGRADE MATERIAL THAT CAN SUSTAIN GROWTH.
- 7.4.3 ENSURE THE PREPARED SUBGRADE PROVIDES A SMOOTH, FIRM, AND UNVIELDIN FOUNDATION FOR THE MATS. THE SUBGRADE SHALL BE GRADED INTO A PARABO OR TRAPEZOIDAL SHAPE TO CONCENTRATE FLOW TO MIDDLE OF MAT OR MATS.
- 7.4.4 WHEN VEGETATION IS REQUIRED, DISTRIBUTE SEED ON THE PREPARED TOPSO SUBGRADE BEFORE INSTALLATION OF THE CONCRETE MATS IN ACCORDANCE V THE SPECIFICATIONS.

		7.3.6	PROVIDE A MINIMU EDGES EXPOSED	UM 18 IN. DEEP CON TO CONCENTRATED	CRETE MAT EMB	BEDMENT TOE TR S EXTERIOR EDG	ENCH AT ALL ES SUBJECT TO			
R, D IATED		7.3.7	SHEET FLOW A MI PROVIDE FASTENI	NIMUM OF 6 IN. NG OR ANCHORING	AS RECOMMENI	DED BY THE MAN	UFACTURER OR			
TYPE CF	<sup>o</sup> ; 7.4	PAY II	ENGINEER F	OR THE SITE CONDI	ITIONS.					
			ITEM 006, "FLEXAN	IAT STANDARD" PER	R SQUARE FOOT.					
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7.4.5 INSTALL MATS TO THE LINE AND GRADE SHOWN ON THE PLANS AND PER THE MANUFACTURER'S GUIDELINES. THE MANUFACTURER OR AUTHORIZED

INSTALLATION OF THE CONCRETE BLOCK MATS AS NEEDED.

REPRESENTATIVE WILL PROVIDE TECHNICAL ASSISTANCE DURING PREPARATION AND

		1							1	1		
	RECORD	DESCRIPTION									н	
	REVISION	NO DATE									G	
						al Consultants, Inc.			800-763-2326	nc.com	F	
						CIVIL & ENVIRONMENT	117 Seahoard Lane · Suite F		615-333-7797 · 8	www.cecir	E	
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			CITY OF GOOD			SLOPE RI		GOODLEIIS			 c	
		ONS				MFM		АРА	193-778	JBS		
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CLIE	NT _Ci	ty of Goodlettsville	PROJ	ECT NA	ME Geo	technic	al Enginee	ering S	tudy for	Slope Rep	air Desig
PRO.	JECT N	UMBER 193-778-0003	PROJ	ECT LO	CATION	Good	ettsville, Tl	N			
DATE	E STAR	TED _1/7/20         COMPLETED _1/7/20	GRO	JND ELE	VATION	578.1	ft	BAC	FILL	Bentonite	
DRIL	LING C	ONTRACTOR Hawkston, LLC	WATE	R LEVE	LS:						
DRIL	LING N	ETHOD 3.25" I.D. Hollow Stem Auger & NQ Rock Core		AT TIME	OF DRIL	LING	Dry				
CEC	REP _	ECR CHECKED BY APA		AT END	OF DRIL	LING _	No mea	surem	ient tak	en	
LOCA	ATION	N 733744.8, E 1758638.6		AFTER	DRILLING	6 <u> B</u>	ackfilled in	nmedia	ately		
ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		o DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	20 F 20 □ FIN 20	SPT N VA           40         6           PL         MC           40         6           40         6           NES CONT         6           40         6	LUE ▲ <u> 50 80</u> LL 50 80 ENT (%) [ 50 80
		TOPSOIL (0.3 feet)	/	-							
[		Brown GLAY, some slit, moist, very sott, (COLLUVIAL S	JIL)		SS 1	22	1-1-1	.5			
575							0-0-0	1_			
				_	2	11	(0)	.5 /	t i		
		limestone fragments, moist, soft, (RESIDUAL SOIL)		5		33	0-1-2	2.75		•	
L .		Gray LIMESTONE, highly weathered, very broken, hard		-	- ss	0	50/0.1				50/
- 570		Gray LIMESTONE, moderately weathered, moderately b very hard	oken,	+		J 					
				Ļ	RC	78					
L .				10	1	(49)					
Ļ .	┢┷			-	11						
L .		Dark grav SHALE moderately weathered moderately br	oken	-	RC	41					
		medium hard, approximate 4" void noted during drilling n bedrock transition	ear			<u>(42)</u>					
ł		Bottom of boring at 12.7 feet.									
		Notes: Auger refusal encountered at 6.9 feet.									
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	-/ /-	Franklin, TN 37067									
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PROJ	ECT N	UMBER <u>193-778-0003</u>	PROJE		ATION	Goodle	ettsville, T	N			
DATE	STAR	TED _1/8/20 COMPLETED _1/8/20	GROUN		VATION	575.1	ft	BACK	FILL E	Bentonite	
DRILI		ETHOD 3.25" I.D. Hollow Stem Auger			.5. OF DRII		Drv				
CEC	REP _E	CR CHECKED BY APA	A	TEND	OF DRIL	LING	Dry				
LOCA		N 733729.6, E 1758641.1	A	FTER D	RILLING	Э В	ackfilled ir	nmedia	ately		
ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	▲ 20 P 20 □ FIN	SPT N VAI 40 60 L MC 40 60 IES CONTE	UE ▲ <u>) 80</u> LL <u>0 80</u> ENT (%
5/5									20	0 01	, 00
		Dark brown CLAY, some silt, moist, medium stiff, <b>(RESIDL</b> SOIL)	JAL	[ ]	SS 1	22	1-2-3	1.75	<b>▲</b> .●	,	
		Brown to yellow CLAY, some silt, some sand, trace gravel	,		ss	45	2-2-3	1 75			
		moist, meaium sun to soft, <b>(RESIDUAL SUIL)</b>			2		(5)		IT I		
570		Drawn black are mattling CLAV come oilt troop cond f		5	3	13	(3)	.75		•	
		limestone fragments, moist, medium stiff, <b>(RESIDUAL SOI</b>	ew L)		$\bigvee ss_4$	50	2-2-4 (6)	2.75			1
						80	3-9- 50/0.25	2.75			50
		Bottom of boring at 8.3 feet.		1				1			
		Auger refusal encountered at 8.3 feet.									

2019/193-778/-CADD/Dwg/CV01/193778-CV01-C001.dwg{C004} LS:(8/5/2022 - jward) - LP: 8/24/2022 9:30 AM

	Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Ste. E-100 Franklin, TN 37067					BC	RIN
	y of Goodlettsville	PROJEC			echnic Good	cal Enginee	ering S
DATE STAR	<b>COMPLETED</b> 1/8/20	GROUN			566 1	ft	BACK
DRILLING C	ONTRACTOR Hawkston LLC	WATER		S:	000.1	<u>n</u>	DAON
DRILLING M	ETHOD _3.25" I.D. Hollow Stem Auger	∑A	т тіме	OF DRIL	LING	5.5 ft / Ele	ev 560.
	CR CHECKED BY APA	A	T END	of Drili	LING	Hole co	llapse
	N 733689.5, E 1758635.0	Α	FTER D	RILLING	i E	ackfilled in	nmedia
ELEVATION (ft) GRAPHIC LOG	MATERIAL DESCRIPTION		o DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
565							
	Brown GLAY, some slit, trace sand, moist, soft, (COLLUV SOIL)	IAL		SS 1	45	2-2-2	1.0
	Brown and gray mottled with orange staining CLAY, some	silt,		K ss	45	1-3-5	4-
	trace sand, few limestone fragments, moist, medium stiff, (RESIDUAL SOIL)		L -	2	45	(8)	1.5
	$\overline{\nabla}$		5	3	33	2-5-4	1.25
~~~~~				SS	0	50/0.1	7
	Bottom of boring at 5.7 feet.				/		
	Auger refusal encountered at 5.7 feet.						

	7/	Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Ste. E-100 Franklin, TN 37067					BC	DRIN	10
CLIEN	T City	v of Goodlettsville	PROJE		<b>/IE</b> Geo	technic	al Engine	ering S	tu
PROJE	ECT NU	JMBER 193-778-0003	PROJE	CTLOC		Goodl	ettsville, T	N	
DATE	STAR	<b>COMPLETED</b> 1/8/20	GROUN	ID ELE	VATION	563.6	ft	BACK	= (F
DRILL	ING CO	DNTRACTOR Hawkston, LLC	WATER		_S:				
DRILL	ING MI	ETHOD _3.25" I.D. Hollow Stem Auger	А	т тіме	OF DRIL	LING	Dry		
CEC R	EP _E	CR CHECKED BY APA	А	T END	of Dril	LING _	Dry		
LOCA		N 733704.3, E 1758709.8	Α	FTER D	RILLING	i B	ackfilled in	nmedia	ate
ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		o DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	
-		TOPSOIL (0.3 feet) Brown and black CLAX some silt moist soft (COLLUV	/	1					
-		SOIL)		Ļ -		27	0-2-2 (4)	2	
560		Brown, black, and orange CLAY, some silt, few limestone	)		🛛 ss	33	0-2-2	2	
300		iragments, moist, sort, ( <b>RESIDUAL SOIL</b> )			$\frac{2}{3}$	100	(4)	1.5	
		Note: Auger refusal encountered at 4.2 feet.							

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S NUMBER B-2         PAGE 1 OF 1         dy for Slope Repair Design         ILL         Bentonite         ft         at surface         sly         A SPT N VALUE ▲         20       40       60       80         PL       MC       LL			SION RECORD DESCRIPTION		Η
20 40 60 80 □ FINES CONTENT (%) □ 20 40 60 80 • • • 50/0.1			NO DATE REVIS		G
				Civil & Environmental Consultants, Inc. 117 Seaboard Lane · Suite E-100 · Franklin, TN 37067 615-333-7797 · 800-763-2326 www.cecinc.com	F
> NUMBER B-4         PAGE 1 OF 1         dy for Slope Repair Design         ILL         Bentonite         !!y         ▲ SPT N VALUE ▲         20       40         60       80         PL       MC         20       40         60       80         STINES CONTENT (%) □         20       40         20       40         60       80			CITY OF GOODLETTSVILLE MARSHALL GREENE	SLOPE REPAIR GOODLETTSVILLE, TN	р 
				WJW APA 193-778 JBS	
			BORING LOGS	AUGUST 2022 DRAWN BY: AS SHOWN CHECKED BY:	В
		BRYANT BRYANT SHITTERED ENC SHITTERED ENC SH	DRAWING NO.:	DATE: DWG SCALE: PROJECT NO: APPROVED BY:	
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THE CONTRACTOR SHALL REFER TO ALL PLANS WITHIN THIS PLAN SET. IT IS NOT THE DESIGNER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THIS PROJECT.

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LEGEND:							
	EXISTING PROPERTY LINE						
	EXISTING ADJACENT PROPERTY LINE						н
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$\wedge \wedge \wedge \wedge$	PROPOSED CONCRETE DITCH DEMOLITION			Ĩ	SI 3-77	ŇŇ	
				60	ane -33;	;	
				- H	ப	)	1

# **KEY NOTES**

- 1. SAWCUT CONCRETE DITCH.
- 2. REMOVE APPROXIMATELY 1120 SQ. FT. OF EXISTING CONCRETE DITCH FOR PROPOSED PIER WALL CONSTRUCTION.
- 3. EXISTING SOIL MASS, VEGETATION, ETC. TO BE CLEARED AND GRUBBED AS NEEDED TO FACILITATE PIER WALL CONSTRUCTION.
- 4. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND IDENTIFYING EXISTING UTILITIES. CONTRACTOR SHALL COORDINATE WITH CITY AND ENGINEER ON RELOCATION, REMOVAL, OR ABANDONMENT.

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## NOTE TO CONTRACTOR

now what's below. Call before you dig. The contractor shall refer to all plans within this plan set. It is not the designer's intent that any single plan sheet in this set of documents fully depict all work associated with this project.

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