BID SET

SITE CONSTRUCTION PLANS

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS

PREPARED FOR:
EFFINGHAM COUNTY
804 S Laurel Street, Springfield, GA 31329
EFFINGHAM COUNTY
912-754-2123

ROBERTS
CIVIL ENGINEERING
WWW.ROBERTSCIVILENGINEERING.COM

301 SEA ISLAND ROAD, SUITE 10
ST. SIMONS ISLAND, GA 31522
912-638-9681

6001 CHATHAM CENTER DRIVE, SUITE 255
SAVANNAH, GA 31405
912-298-7006

14600 WHIRLWIND AVENUE, SUITE 119A
JACKSONVILLE, FL 32218
904-741-0099

4000 FABER PLACE DRIVE, SUITE 300
NORTH CHARLESTON, SC 29405
843-323-4224

811 Know what's below. Call before you dig.

VICINITY MAP NTS

EFFINGHAM COUNTY

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS

OWNER
EFFINGHAM COUNTY
CONTACT
ERIC LARSON
EMAIL
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ENGINEER
ROBERTS CIVIL ENGINEERING
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#	REVISIONS
1	04/06/22: DRIVES, ADDL STORM, DEMO, ETC
2	04/18/22: 2" OVERLAY
3	
4	
5	

04/06/22: ORIGINAL ISSUE DATE

RCE PROJECT NUMBER: 21508

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COVER

GENERAL NOTES:

1. CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO APPLICABLE FEDERAL, STATE, AND LOCAL LAWS.
2. PERMITS NECESSARY FOR CONSTRUCTION SHALL BE OBTAINED BY CONTRACTOR.
3. DEVIATIONS FROM PLANS ARE PROHIBITED WITHOUT WRITTEN CONSENT OF THE ENGINEER.
4. CONTRACTOR IS TO IMMEDIATELY CONTACT ENGINEER IF ANY UNFORESEEN CONDITIONS OR DISCREPANCIES OCCUR.
5. CONTRACTOR SHALL COORDINATE CONSTRUCTION OF UTILITIES ON SITE WITH APPROPRIATE PROVIDER (I.E., POWER, PHONE, CABLE, ETC.).
6. ENGINEER IS NOT RESPONSIBLE FOR PHYSICAL CONSTRUCTION OF SITE.
7. CONTRACTOR SHALL MAINTAIN A SAFE SITE AND MEET APPROPRIATE REGULATIONS CONCERNING SAFETY.
8. SURVEY DATA PROVIDED BY ATLAS SURVEYING.
   A. DATE OF SURVEY MARCH 2022
9. EXISTING SURVEY INFORMATION TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES IN FIELD OBSERVATIONS VERSUS SURVEY DATA.
10. CONTRACTOR TO LOCATE UTILITIES PRIOR TO CONSTRUCTION BY CALLING "CALL BEFORE YOU DIG" HOTLINE: 811.
11. HORIZONTAL DATUM BASED ON GEORGIA STATE PLANE COORDINATE SYSTEM, EAST ZONE NAD83. VERTICAL DATUM BASED ON NAVD88.

ADA NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR ADHERING TO CURRENT ADA REQUIREMENTS.
2. EXTERIOR ACCESSIBLE ROUTE SHALL HAVE A MINIMUM WIDTH OF 3 FEET. IF ACCESSIBLE ROUTE CLEAR WIDTH IS LESS THAN 5 FEET, THEN 5'X5' PASSING SPACES SHALL BE PROVIDED EVERY 200' OR LESS. INTERSECTING SIDEWALKS MEET THIS REQUIREMENT.
3. FINISHED SURFACE HEIGHT DIFFERENCE REQUIREMENTS SHALL MEET FOLLOWING:
   A. 0 - ¼" NO REQUIREMENTS.
   B. ¼"- ½" BEVEL WITH 1:2 SLOPE.
   C. GREATER THAN ½" CONFORM TO RAMP REQUIREMENTS.
4. RAMPS SHALL MEET FOLLOWING CONSTRAINTS:
   A. MAX SLOPE 1:12.
   B. MAX RAMP RISE IS 30".
   C. MAX RAMP LENGTH IS 30'.
   D. MAX CROSS SLOPE IS 2.00%.
5. RAMP LANDINGS SHALL MEET FOLLOWING CONSTRAINTS:
   A. A MINIMUM 5' LONG LEVEL LANDING AT LEAST AS WIDE AS RAMP SHALL BE PLACED AT TOP AND BOTTOM OF RAMP.
   B. LANDING SHALL BE MINIMUM 5'X5' WHERE RAMP CHANGES DIRECTION.
   C. LANDINGS SHALL NOT EXCEED A 2.00% SLOPE.
6. HANDRAILS SHALL MEET FOLLOWING CONSTRAINTS:
   A. IF RAMP RISE IS GREATER THAN 6", THEN HANDRAILS ARE REQUIRED ON BOTH SIDES OF RAMP.
   B. MINIMUM OF 12" LONG HANDRAIL EXTENSIONS SHALL BE PROVIDED AT TOP AND BOTTOM OF LANDINGS.

EARTHWORK AND PAVING:

1. UPPER 12 INCHES OF SUBGRADE BELOW PAVEMENT AND BUILDINGS SHALL BE SCARIFIED AND RECOMPACTED TO 100% STANDARD PROCTOR MAX DRY WEIGHT DENSITY WITH A MOISTURE CONTENT WITHIN 2% OF OPTIMUM MOISTURE CONTENT.
2. CONTRACTOR TO PROVIDE TEST RESULTS OF SUBGRADE AND BASE COURSE COMPACTION TO ENGINEER INCLUDING VOLUME ESTIMATES OF ANY UNSUITABLE SOILS TO BE REMOVED AND REPLACED THAT WERE IDENTIFIED DURING COMPACTION OPERATIONS PER ITEM NO. 1 ABOVE , IF ANY. CONTRACTOR SHALL NOT PROCEED WITH OVER-EXCAVATION AND REPLACEMENT OF UNSUITABLE SOILS WITHOUT WRITTEN AUTHORIZATION FROM ENGINEER OR OWNER.
3. FOR APPROVED AREAS OF OVER-EXCAVATION AND REPLACEMENT, CONTRACTOR TO REMOVE IDENTIFIED UNSUITABLE MATERIAL TO A DEPTH OF 3 FEET AND REPLACE WITH STRUCTURAL FILL.
4. IN AREAS WHERE STRUCTURAL FILL IS REQUIRED, FILL SHALL BE PLACED IN LIFTS OF 6 INCHES AND BE COMPACTED TO 100% STANDARD PROCTOR MAX DRY WEIGHT DENSITY. STRUCTURAL FILL SHALL CONSIST OF GRANULAR SOIL CONTAINING LESS THAN 10% MATERIAL PASSING THE NO 200 SIEVE.
5. EXCAVATION AND FILL SHALL BE COMPLETED PRIOR TO INSTALLATION OF UTILITIES.

GRADING & DRAINAGE NOTES:

1. STORM PIPES SHALL BE JOINED PER DOT SPECIFICATIONS.
2. PIPING SHALL BE INSTALLED IN NEW CONDITION.
3. A RIGHT-OF-WAY WORK PERMIT MAY BE REQUIRED BEFORE ANY WORK CAN BE DONE IN RIGHT-OF-WAY.
4. STORM DRAINAGE PIPING SHALL BE CONSTRUCTED PER GA DOT SPECS.
5. STORM DRAINAGE PIPING JOINTS SHALL BE WRAPPED IN FILTER FABRIC.
6. CONTRACTOR TO REQUEST CONFIRMATION OF LATEST PLAN REVISION DATE FROM ENGINEER IN WRITING PRIOR TO ORDERING MATERIALS.
7. IT IS CONTRACTOR'S SOLE RESPONSIBILITY TO REVIEW AND APPROVE SHOP DRAWINGS PRIOR TO ORDERING MATERIALS.

GENERAL WATER NOTES:

1. PVC PIPE SHALL BE BLUE IN COLOR. PIPE 4" TO 12" SHALL CONFORM TO REQUIREMENTS OF AWWA C-900, DR 18 PRESSURE CLASS 235 PSI AND SHALL HAVE FOLLOWING MINIMUM WALL THICKNESS:
   4" DIA - 0.267"
   6" DIA - 0.383"
   8" DIA - 0.503"
   10" DIA - 0.617"
   12" DIA - 0.733"
   PIPE LESS THAN 4" IN DIAMETER SHALL CONFORM TO ASTM D-1784 AND D-2241 (SDR 21). PIPE SHALL HAVE A MINIMUM PRESSURE RATING OF 200 PSI. PVC PIPE SHALL BEAR NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL.
2. FITTINGS FOR PVC SHALL BE DUCTILE IRON IN ACCORDANCE WITH ANSI A-21.53 (AWWA C-153). FITTINGS SHALL BE CEMENT LINED IN ACCORDANCE WITH ANSI A-21,4 (AWWA C-104). FITTINGS LESS THAN 4" SHALL BE PVC WITH RING TITE RUBBER JOINTS CONFORMING TO ASTM D-3139.
3. VALVES SHALL BE INSTALLED IN APPROVED UNDERGROUND VALVE BOXES OF DUCTILE IRON WITH A SUITABLE CRUSHING STRENGTH FOR LOCATION INSTALLED.
4. MAINTAIN A 10' HORIZONTAL SEPARATION BETWEEN ANY EXISTING OR PROPOSED WATER MAIN AND SANITARY SEWER, STORM SEWER, OR SEWER MANHOLE.
5. WHEN A 10' HORIZONTAL SEPARATION CANNOT BE MAINTAINED, WATER MAIN MAY BE LAID CLOSER TO SEWER PROVIDED THAT WATER MAIN IS LAID IN A SEPARATE TRENCH AT LEAST 18" ABOVE TOP OF SEWER.
6. WATER CROSSING A SEWER SHALL BE AT LEAST 18" ABOVE TOP OF SEWER. A FULL LENGTH (SECTION) OF WATER PIPE SHALL BE USED AT THESE CROSSINGS WITH ENDS OF WATER PIPE SECTION AS FAR AWAY FROM SEWER AS POSSIBLE.
7. VERIFY SIZE AND LOCATION OF WATER SERVICES PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS.
8. IF UTILITY CONFLICT IS ENCOUNTERED IN FIELD, SEE UTILITY CONFLICT DETAIL.

GENERAL SEWER NOTES:

1. PVC PIPE SHALL BE POLYVINYL CHLORIDE PLASTIC (PVC) AND SHALL MEET REQUIREMENTS OF ASTM D 3034 SDR 26. DEPTHS LESS THAN 3' SHALL BE DUCTILE IRON PIPE. ASTM D 2321 MUST BE FOLLOWED FOR INSTALLATION OF PVC PIPE. RUBBER RINGS SHALL BE USED FOR CONTRACTION AND EXPANSION AT EACH JOINT. FITTINGS SHALL MEET SAME SPECIFICATION REQUIREMENTS AS PIPE. TESTS ON PVC PIPE SHALL BE DESIGNED TO PASS TESTS AT 73° F. PIPE STANDARD LENGTHS SHALL BE 12.5' (PLUS OR MINUS 1"). PIPE SIZES AND DIMENSIONS SHALL BE AS SHOWN IN THE TABLE BELOW:

NOM SIZE:	OUTSIDE DIA:	MIN WALL THICKNESS:
4"	4.215"	0.162"
6"	6.275"	0.241"
8"	8.400"	0.323"
10"	10.500"	0.404"
12"	12.500"	0.481"

2. JOINTS FOR PVC PIPE - SHALL BE INTEGRAL WALL BELL AND SPIGOT WITH A RUBBER RING GASKET. THE JOINTS SHALL CONFORM TO ASTM D 3212 AND GASKETS SHALL CONFORM TO ASTM F 477.
3. PRECAST CONCRETE MANHOLES - SHALL BE REINFORCED CONCRETE CONSTRUCTED IN ACCORDANCE WITH ASTM C 478 AND DETAILS SHOWN ON PLANS. JOINTS SHALL BE TONGUE AND GROOVE SEALED WITH FLEXIBLE GASKETS OR MASTIC SEALANT. GASKETS SHALL BE O-RING OR EQUIVALENT TO TYPE A OR B "TYLOX" CONFORMING TO ASTM C 443. MASTIC SHALL BE EQUIVALENT TO "RAM-NEK" WITH PRIMER. CONTACT SURFACES OF MANHOLE JOINT SHALL HAVE PRIMER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. FRAMES AND COVERS - SHALL BE EQUIVALENT OF NEENAH FOUNDRY CO. R-1668 TYPE "C" LID
5. MANHOLE STEPS - SHALL BE EQUIVALENT TO M.A. INDUSTRIES, TYPE PS-1 OF PS-2 OR IMCO REINFORCED PLASTICS, INC. MODEL FRP. STEPS SHALL BE INSTALLED AT MANHOLE FACTORY AND IN ACCORDANCE WITH RECOMMENDATIONS OF STEP MANUFACTURER.
6. PIPE CONNECTIONS - SHALL HAVE FLEXIBLE WATERTIGHT JOINTS AT POINT OF ENTRY OF ANY SEWER MAIN INTO MANHOLE. JOINT SHALL BE WEDGED RUBBER SHAPE EQUIVALENT TO "PRESS WEDGE II," OR A RUBBER SLEEVE EQUIVALENT TO "KOR-N-SEAL" OR 'LOCK JOINT."
7. #12 GAUGE SINGLE STRAND COPPER TRACING WIRE SHALL BE USED OVER ALL FORCE MAIN, SANITARY SEWER, AND SERVICE LATERAL LINES.
8. SEWER EXCAVATIONS SHALL BE TO DESIRED DEPTHS SHOWN ON PLANS WITH ADHERENCE TO OCCUPATIONAL AND SAFETY HEALTH ADMINISTRATION'S (OSHA) REGULATIONS. IN AREAS OF UNSUITABLE SOIL CONDITIONS, TRENCH MAY REQUIRE ADDITIONAL EXCAVATION AND BACKFILL WITH SAND, GRAVEL, OR CONCRETE.
9. SEWER PIPES SHALL BE LAID UPGRADE WITH SPIGOTS POINTING DOWNGRADE. ASSEMBLY OF JOINTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS. SEAL OPEN ENDS OF PIPES IF INSTALLATION IS INTERRUPTED. MANHOLE CONNECTIONS SHALL BE WATER TIGHT WITH USE OF FLEXIBLE WATER STOPS AND RESILIENT CONNECTORS.
10. MANHOLES SHALL HAVE A NON-SHRINK GROUT CHANNEL IN BOTTOM THAT IS SMOOTH, ROUNDED, AND SHAPED TO FACILITATE GRAVITY SEWER FLOW TOWARDS OUTGOING PIPE. CHANNEL WIDTH SHALL MATCH PIPING SIZE. INVERT OF CHANNEL SHALL BE UNIFORMLY SLOPED BETWEEN INCOMING AND OUTGOING PIPES. TOP OF BENCH SHALL MATCH TOP OF LARGEST PIPE. SLOPE TOP OF BENCH 1" PER FOOT TOWARDS CHANNEL
11. MANHOLE TOP ELEVATIONS SHALL BE GREATER THAN OR EQUAL TO FIFTY (50) YEAR FLOOD ELEVATION, UNLESS WATERTIGHT COVERS ARE PROVIDED. OUTSIDE OF PAVED AREAS, MANHOLE TOP ELEVATION SHALL BE 1" ABOVE GROUND SURFACE IN DEVELOPED AREAS AND 6" ABOVE GROUND SURFACE IN UNDEVELOPED AREAS UNLESS SHOWN OTHERWISE ON PLANS. MANHOLES IN PAVED AREAS SHALL BE BUILT AS DESIGNATED BY ENGINEER. NO LEAKS IN MANHOLES ARE ACCEPTABLE.

BID SET

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

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I-5 GENERAL NOTES

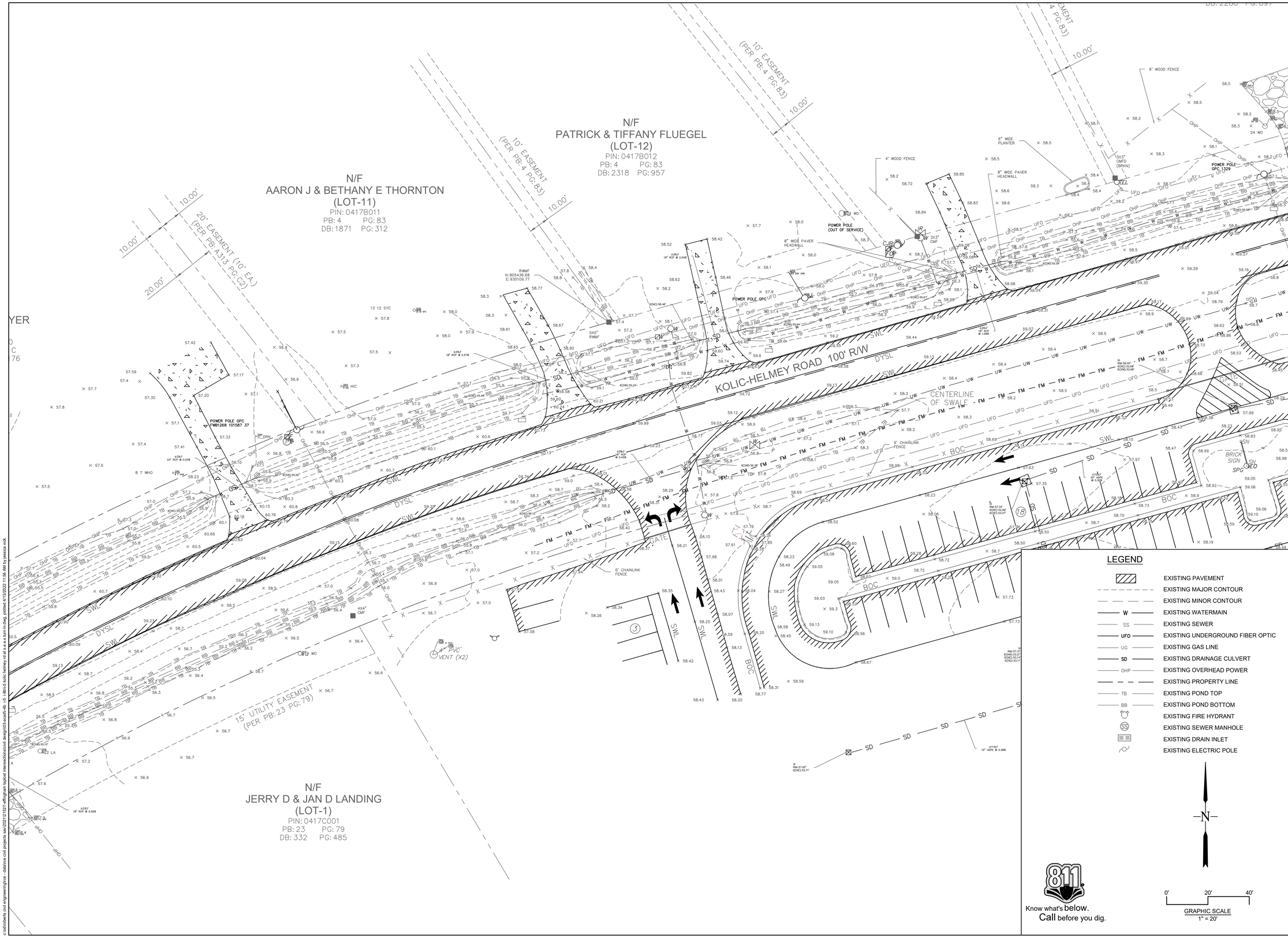
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21508
DRAWN BY: DUF
CHECKED BY: JLV
SCALE: 1":30' (FOR 24"X36" PLOT)

SHEET: 1

c:\sdr\roberts civil engineering\roe - datavice civil projects sav\2021\21527-effingham taylor intersections\civil design\03-acad\i-ds - i-5 - sdb-5 kolb helmey rd at s.e.e.s turn lh.dwg, plotted 4/13/2022 11:17 AM by jessica vick



LEGEND

- EXISTING PAVEMENT
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING WATERMAIN
- EXISTING SEWER
- EXISTING UNDERGROUND FIBER OPTIC
- EXISTING GAS LINE
- EXISTING DRAINAGE CULVERT
- EXISTING OVERHEAD POWER
- EXISTING PROPERTY LINE
- EXISTING POND TOP
- EXISTING POND BOTTOM
- EXISTING FIRE HYDRANT
- EXISTING SEWER MANHOLE
- EXISTING DRAIN INLET
- EXISTING ELECTRIC POLE

N

Know what's below. Call before you dig.

0' 20' 40'
GRAPHIC SCALE
1" = 20'

BID SET

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

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I-5 EXISTING CONDITIONS PLAN

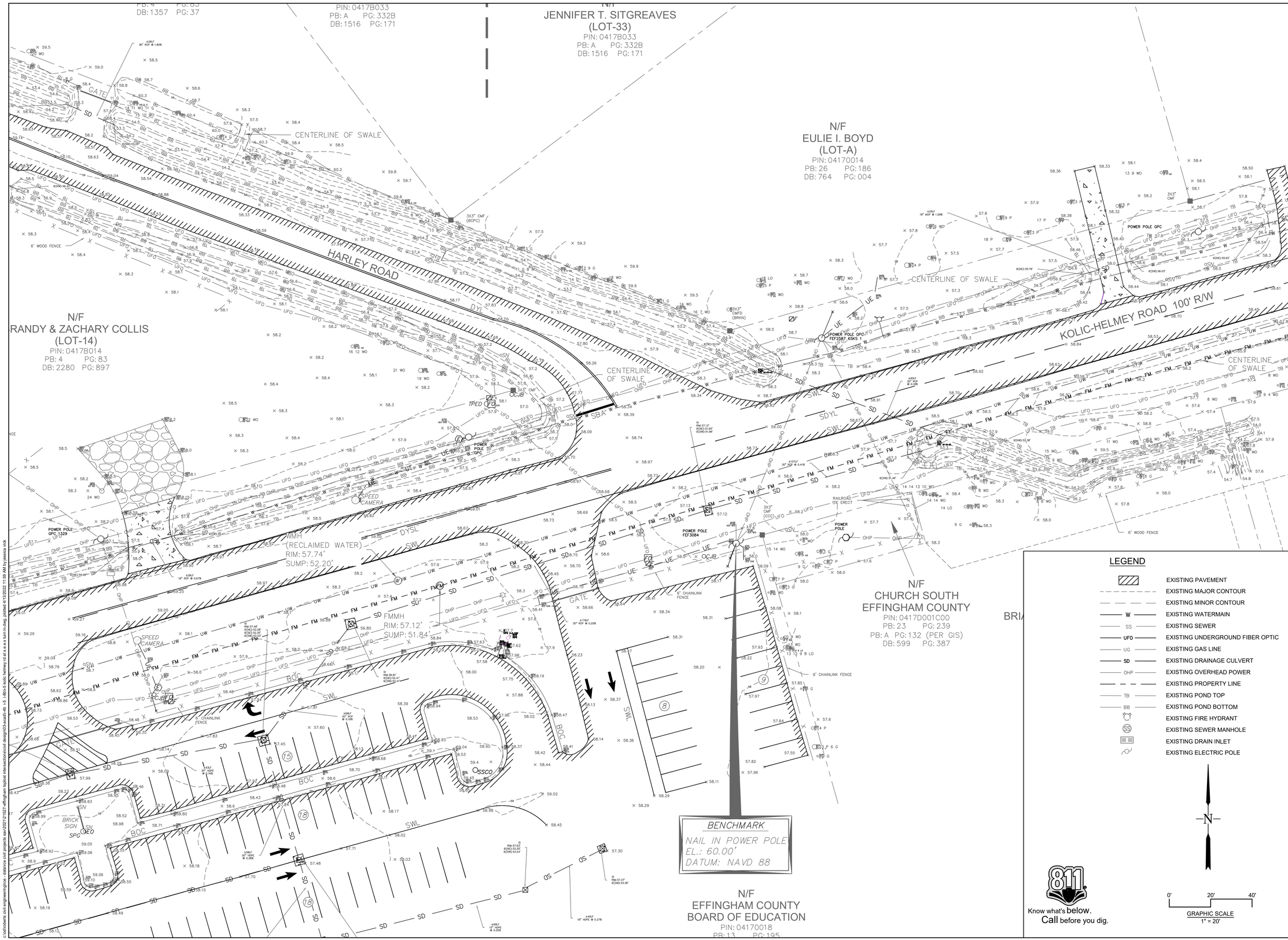
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21508
DRAWN BY: DUF
CHECKED BY: JLV
SCALE: 1":20' [FOR 24"X36" PLOT]

SHEET: 2A

c:\odroberts civil engineering\ce - data\ce civil projects sav\2021\21527-effingham bpost intersection\civil design\03-sca\21-40_L8_I-95\c-5 kolic helmey rd at s e e a turn fr.dwg, plotted 4/13/2022 11:56 AM by jessica vick



LEGEND

- EXISTING PAVEMENT
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- W — EXISTING WATERMAIN
- SS — EXISTING SEWER
- UFO — EXISTING UNDERGROUND FIBER OPTIC
- UG — EXISTING GAS LINE
- SD — EXISTING DRAINAGE CULVERT
- OHP — EXISTING OVERHEAD POWER
- EXISTING PROPERTY LINE
- TB — EXISTING POND TOP
- BB — EXISTING POND BOTTOM
- EXISTING FIRE HYDRANT
- EXISTING SEWER MANHOLE
- EXISTING DRAIN INLET
- EXISTING ELECTRIC POLE

N

0' 20' 40'
GRAPHIC SCALE
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I-5 EXISTING CONDITIONS PLAN

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21508
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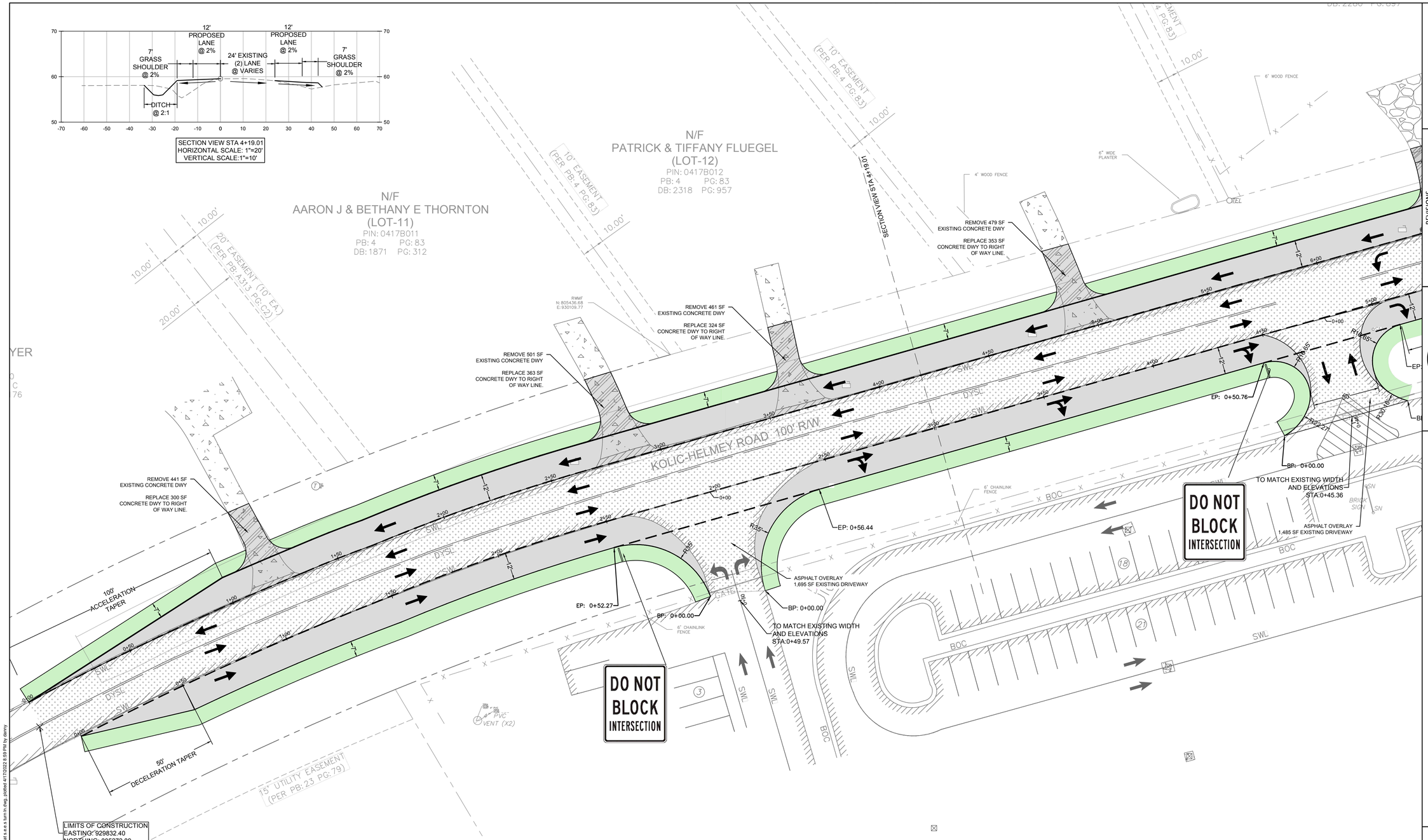
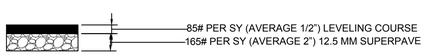
CHECKED BY: JLV
SCALE: 1":20' (FOR 24"X36" PLOT)

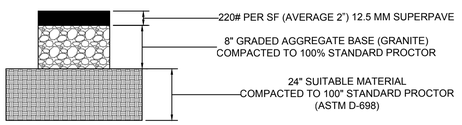
SHEET: 2B

c:\pdcroberts civil engineering\ce - data\ce civil projects sav\2021\21527-effingham bpost intersection\civil design\03-acad\fb_i-5 - fb\fb-5 bdbc helmey rd at s e e a turn in.dwg plotted 4/13/2022 11:09 AM by jessica vick





PROPOSED ROAD OVERLAY SECTION



PROPOSED ROAD PAVEMENT SECTION

LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED 2" OVERLAY
- PROPOSED SHOULDER
- PROPOSED CONCRETE DRIVEWAY

Know what's below. Call before you dig.

GRAPHIC SCALE 1" = 20'

BID SET

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04/06/22: DRIVES, ADDL STORM, DEMO, ETC
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I-5 STAKING PLAN

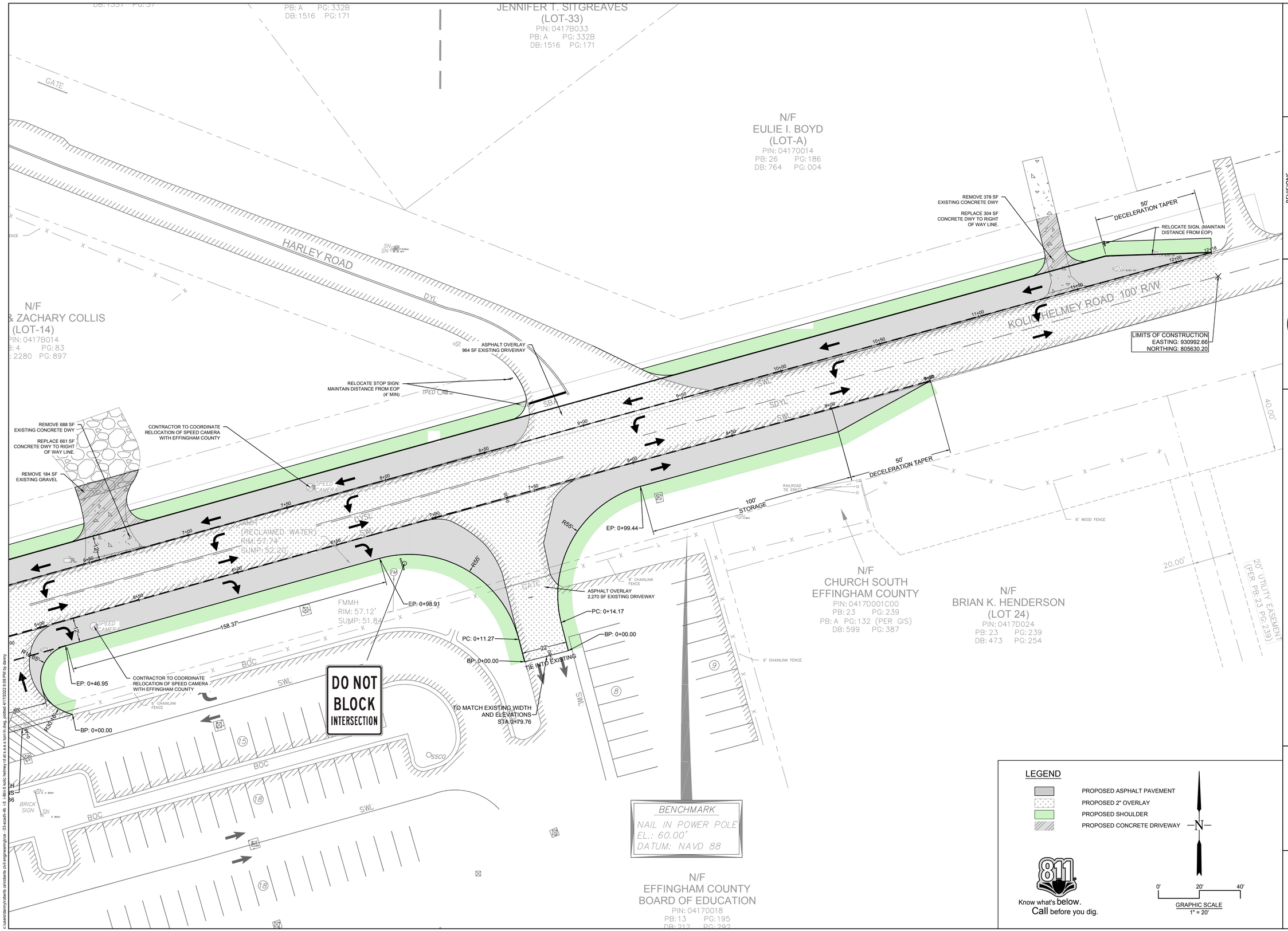
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21508
DRAWN BY: DUF
CHECKED BY: JLV
SCALE: 1":20' [FOR 24"X36" PLOT]

SHEET: 3

c:\users\danny\roberts civil engineering\ce - 03-acad\2-4b - i5 - i-80\i-5 kolic helmey rd st s e e a turn lh.dwg, plotted 4/17/2022 8:39 PM by danny



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I-5 STAKING PLAN
SHEET 2 OF 2

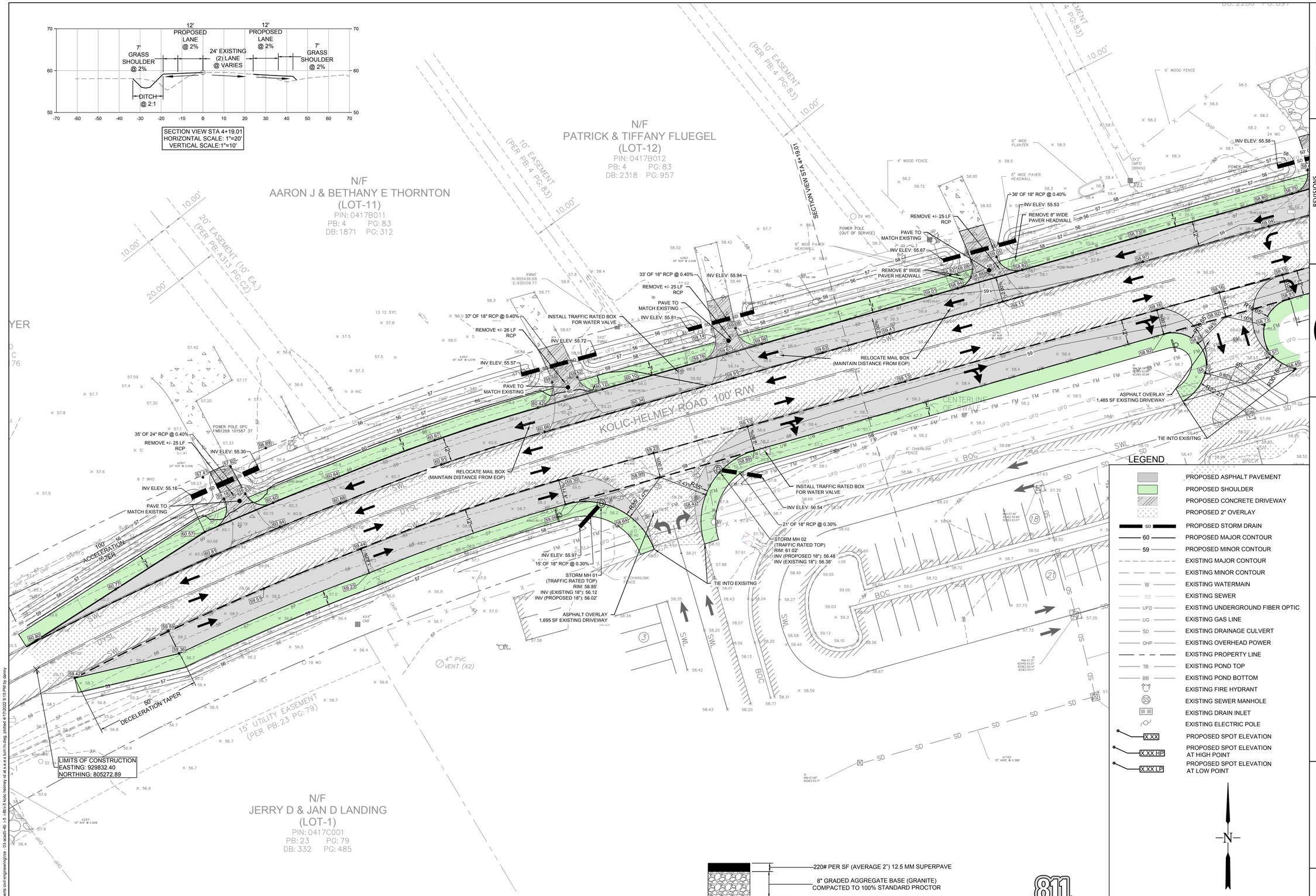
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

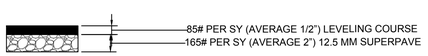
PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21508
DRAWN BY: DUF
CHECKED BY: JLV
SCALE: 1":20' [FOR 34"X36" PLOT]

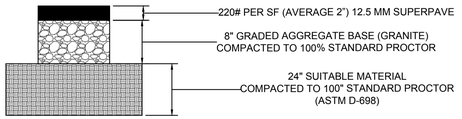
SHEET: 4

C:\users\danny\roberts civil\roberts civil engineering\rce - 03-south 4b - l-5 - 8b\l-5 kolb helmey rd at e.e.s turn in dwg, plotted 4/17/2022 5:08 PM by danny





PROPOSED ROAD OVERLAY SECTION



PROPOSED ROAD PAVEMENT SECTION

Know what's below. Call before you dig.

LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED SHOULDER
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED 2" OVERLAY
- SD — PROPOSED STORM DRAIN
- 60 — PROPOSED MAJOR CONTOUR
- 59 — PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- W — EXISTING WATERMAIN
- SS — EXISTING SEWER
- UFO — EXISTING UNDERGROUND FIBER OPTIC
- UG — EXISTING GAS LINE
- SD — EXISTING DRAINAGE CULVERT
- OHP — EXISTING OVERHEAD POWER
- EXISTING PROPERTY LINE
- TB — EXISTING POND TOP
- BB — EXISTING POND BOTTOM
- EXISTING FIRE HYDRANT
- SS — EXISTING SEWER MANHOLE
- EXISTING DRAIN INLET
- EXISTING ELECTRIC POLE
- X.XX — PROPOSED SPOT ELEVATION
- X.XX HP — PROPOSED SPOT ELEVATION AT HIGH POINT
- X.XX LP — PROPOSED SPOT ELEVATION AT LOW POINT

N

0' 20' 40'
GRAPHIC SCALE
1" = 20'

BID SET

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I-5 GRADING PLAN
SHEET 1 OF 2

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
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DRAWN BY: DJB
CHECKED BY: JLV
SCALE: 1":20' (FOR 24"X36" PLOT)

SHEET: 5

c:\users\danny\roberts civil\roberts civil engineering\rce - 03-acad\5-rlb - i-5 - rlb\i-5 kolic helmey rd alt a & e a turn in.dwg, plotted 4/17/2022 5:15 PM by danny

BID SET

JENNIFER T. SITGREAVES
(LOT-33)
PIN: 0417B033
PB: A PG: 332B
DB: 1516 PG: 171

N/F
EULIE I. BOYD
(LOT-A)
PIN: 04170014
PB: 26 PG: 186
DB: 764 PG: 004

N/F
& ZACHARY COLLIS
(LOT-14)
PIN: 0417B014
PB: 4 PG: 83
DB: 2280 PG: 897

N/F
CHURCH SOUTH
EFFINGHAM COUNTY
PIN: 0417D001C00
PB: 23 PG: 239
PB: A PG: 132 (PER GIS)
DB: 599 PG: 387

N/F
BRIAN K. HENDERSON
(LOT 24)
PIN: 0417D024
PB: 23 PG: 239
DB: 473 PG: 254

N/F
EFFINGHAM COUNTY
BOARD OF EDUCATION
PIN: 04170018
PB: 13 PG: 195
DB: 212 PG: 292

HARLEY ROAD

KOLLI HELMEY ROAD 100

CENTERLINE OF SWALE

23' OF 30" RCP @ 0.30%
INSTALL 437 SF RIPRAP
STORM MH 03
(TRAFFIC RATED TOP)
RIM: 58.51'
INV (PROPOSED 30"): 52.64'
INV (EXISTING 30"): 52.54'
INV ELEV: 52.71
ASPHALT OVERLAY
964 SF EXISTING DRIVEWAY
INV ELEV: 55.78
50' OF 18" RCP @ 0.40%
INV ELEV: 55.58
ASPHALT OVERLAY
2,270 SF EXISTING DRIVEWAY
REPLACE BOX WITH
CAST IRON BOX, RATED
FOR TRAFFIC.
TIE INTO EXISTING
INV ELEV: 56.12
INV ELEV: 56.03
31' OF 18" RCP @ 0.30%
50' DECELERATION TAPER
RELOCATE MAIL BOX
(MAINTAIN DISTANCE
FROM EOP)
LIMITS OF CONSTRUCTION
EASTING: 930992.66
NORTHING: 805630.20
REMOVE 143 SF EXISTING RIPRAP
AND RELOCATE USABLE STONE
STORM MH 05
(TRAFFIC RATED TOP)
RIM: 58.10'
INV (EXISTING 30"): 52.40
INV (PROPOSED 30"): 52.30'
13' OF 30" RCP @ 3.00%
INV ELEV: 51.90
INV ELEV: 51.31
STORM MH 04
(TRAFFIC RATED TOP)
RIM: 57.40'
INV (EXISTING 30"): 51.48
INV (PROPOSED 30"): 51.38'
24' OF 30" RCP @ 0.30%
INSTALL 625 SF RIPRAP
50' DECELERATION TAPER
100' STORAGE
AMMH
(RECLAIMED WATER)
RIM: 57.74'
SUMP: 52.20'
FMMH
RIM: 57.12'
SUMP: 51.84'
BENCHMARK
NAIL IN POWER POLE
EL.: 60.00'
DATUM: NAVD 88

LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED SHOULDER
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED RIPRAP
- PROPOSED 2" OVERLAY
- EXISTING RIPRAP
- SD — PROPOSED STORM DRAIN
- 60 — PROPOSED MAJOR CONTOUR
- 59 — PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- W — EXISTING WATERMAIN
- SS — EXISTING SEWER
- UFO — EXISTING UNDERGROUND FIBER OPTIC
- UG — EXISTING GAS LINE
- SD — EXISTING DRAINAGE CULVERT
- OHP — EXISTING OVERHEAD POWER
- EXISTING PROPERTY LINE
- TB — EXISTING POND TOP
- BB — EXISTING POND BOTTOM
- EXISTING FIRE HYDRANT
- SS — EXISTING SEWER MANHOLE
- EXISTING DRAIN INLET
- EXISTING ELECTRIC POLE
- X.XX — PROPOSED SPOT ELEVATION
- X.XX HP — PROPOSED SPOT ELEVATION AT HIGH POINT
- X.XX LP — PROPOSED SPOT ELEVATION AT LOW POINT

N

0' 20' 40'
GRAPHIC SCALE
1" = 20'

811
Know what's below.
Call before you dig.

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

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I-5 GRADING PLAN
SHEET 2 OF 2

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

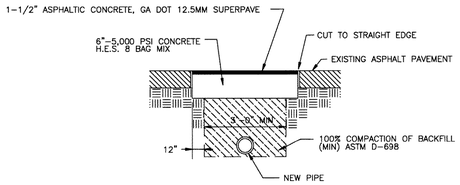
PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21527
DRAWN BY: DJB
CHECKED BY: JLV
SCALE: 1":20' (FOR 24"X36" PLOT)

SHEET: 6

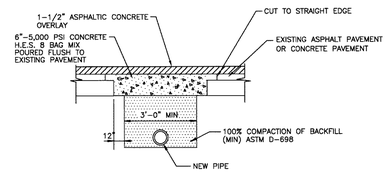
c:\users\danny.roberts\roberts civil engineering\rce - 03 acad\ - i5 - i 95\i-5 kolic helmey rd alt a & e & turn lh.dwg, plotted 4/17/2022 9:23 PM by danny

NOTE :
ALL LATERAL STREET CUTS MUST BE COVERED WITH STEEL PLATES OF SUFFICIENT THICKNESS TO SPAN THE CUT WITHOUT NOTICEABLE DE-FLECTION. PLATES TO REMAIN IN PLACE UNTIL THE CONCRETE BASE HAS GAINED SUFFICIENT STRENGTH TO WITHSTAND TRAFFIC LOADS (24 HOURS MINIMUM).

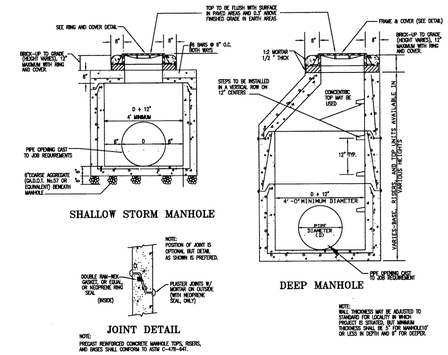


EFFINGHAM COUNTY	PAVEMENT REPLACEMENT	SCALE: N.T.S. DATE: August 2004	P-13

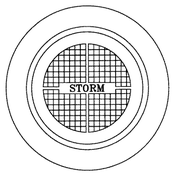
NOTE :
LONGITUDINAL CUTS EXCEEDING 150 FT. IN LENGTH, THE CONCRETE IN TRENCH WILL BE BROUGHT FLUSH WITH THE EXISTING PAVEMENT AND THE EN-TIRE WIDTH OF ROADWAY RESURFACED WITH A MIN. OF 1-1/2" OF 12.5MM SUPERPAVE ASPHALT TOPPING OR SURFACE COARSE.



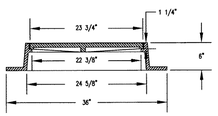
EFFINGHAM COUNTY	PAVEMENT REPLACEMENT DETAIL LONGITUDINAL CUTS	SCALE: N.T.S. DATE: August 2004	P-14



EFFINGHAM COUNTY	STANDARD PRECAST CONCRETE STORM MANHOLE	SCALE: N.T.S. DATE: August 2004	P-24



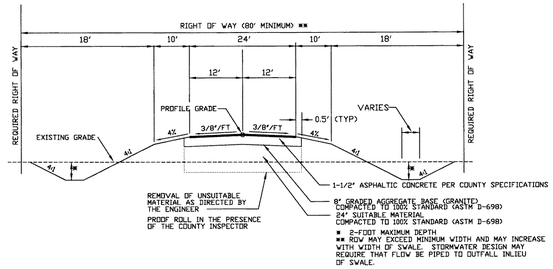
PLAN



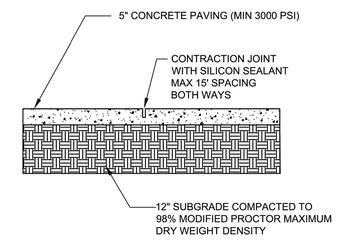
SECTION

NOTE:
MANHOLE RIM & COVER SIMILAR TO U.S. FOUNDRY CO. USF 170-E, TOTAL WEIGHT 280# TYPE "C" LID TO HAVE MACHINED BEARING SURFACES. LID TO BE LETTERED "STORM" (NOT VENTED).

EFFINGHAM COUNTY	STORM MANHOLE RING & COVER	SCALE: N.T.S. DATE: August 2004	P-26



EFFINGHAM COUNTY	TYPICAL SECTION Collector or Arterial Road	SCALE: N.T.S. DATE: November 2004	P-36



5" CONCRETE PAVING SECTION
NTS

BID SET

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

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CONSTRUCTION DETAILS

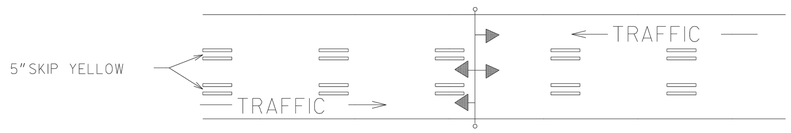
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21527
DRAWN BY: DJB
CHECKED BY: JLV
SCALE: NTS (FOR 24"X36" PLOT)

SHEET: D1

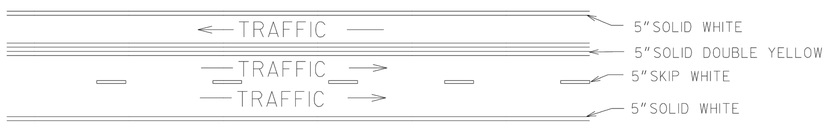
c:\adroberts civil engineering\roe - data\roe civil projects sav\2021\21527-effingham tspl\cst intersections\civil design\03-acad\5-4b_i-5 - 5b\b-5 kolic hallway (d at seers details dwg, plotted 4/18/2022 10:17 PM by jessica vick



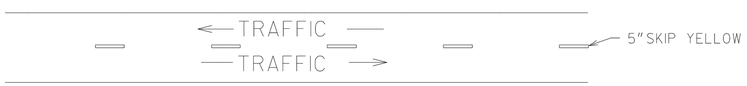
REVERSIBLE LANE SIGN OR SIGNAL SYSTEM REQUIRED

TWO-WAY TRAFFIC WITH A REVERSIBLE CENTER LANE

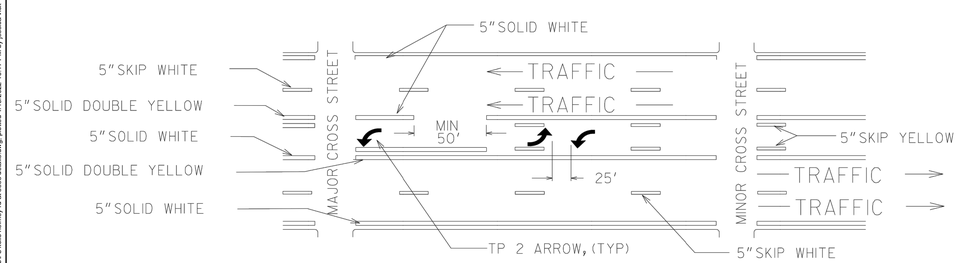
TWO-WAY TRAFFIC WHERE MOTORISTS IN A SINGLE LANE ARE PERMITTED TO PASS



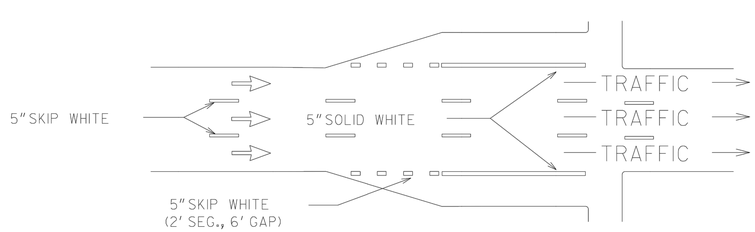
TWO-WAY TRAFFIC WHERE MOTORISTS IN A SINGLE LANE ARE NOT PERMITTED TO PASS



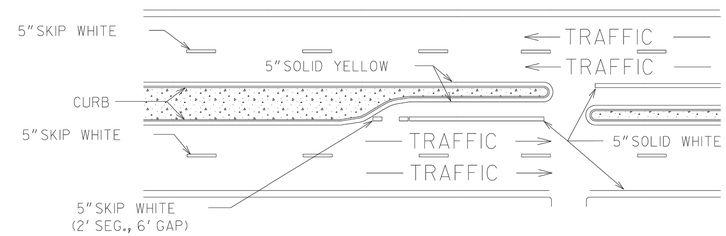
TWO-LANE, TWO-WAY TRAFFIC WITH PASSING PERMITTED



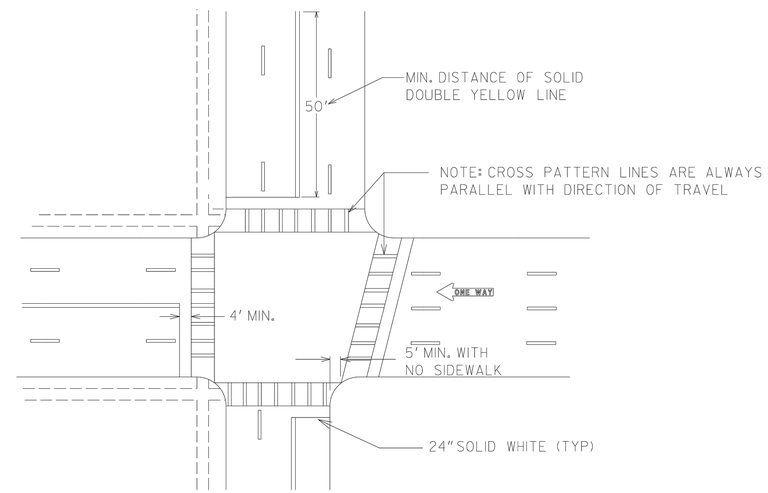
MULTI-LANE, TWO-WAY TRAFFIC WITH SINGLE LANE, TWO-WAY LEFT TURN CHANNELIZATION



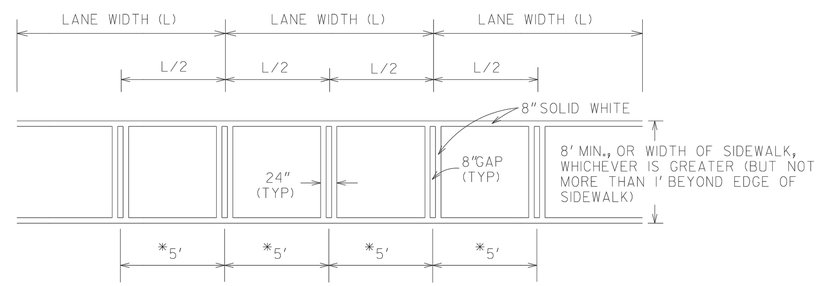
ONE-WAY TRAFFIC WITH ADDED TURN LANES



DIVIDED HIGHWAY WITH RAISED MEDIAN



TYPICAL LOCATION OF CROSSWALKS AND STOP BARS



*USE WHERE THE LANE WIDTH EXCEEDS 12'
OR WHERE LANE LINES HAVE BEEN OMITTED

CROSSWALK DETAIL

GENERAL NOTES:

1. SPACING BETWEEEN DOUBLE LINES SHALL BE EQUAL TO THE LINE WIDTH.
2. EDGE LINES SHALL BE PLACED A MINIMUM OF 4 INCHES FROM THE NORMAL EDGE OF PAVEMENT.
3. CONTRAST MARKINGS FOR SKIP STRIPING SHALL BE AS SHOWN IN DETAIL T-11B.

BID SET

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

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CONSTRUCTION DETAILS

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

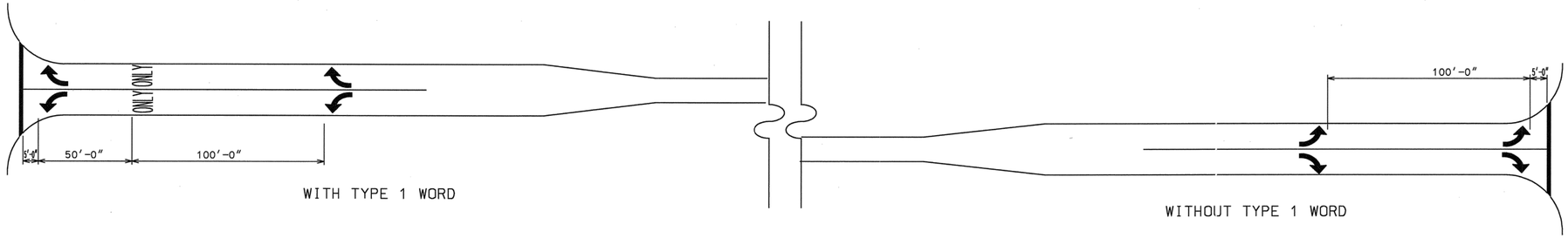
PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21527
DRAWN BY: DJB
CHECKED BY: JLV
SCALE: NTS (FOR 24"X36" PLOT)

SHEET: D2

c:\civil\roberts civil engineering\rce - dataroce civil projects sav\2021\21527-effingham tspl\sat intersection\civil design\03-sadt\1-4b I-5 -280-5 kdc helmey rd at sees details.dwg, plotted 4/18/2022 10:17 PM by jessica vick

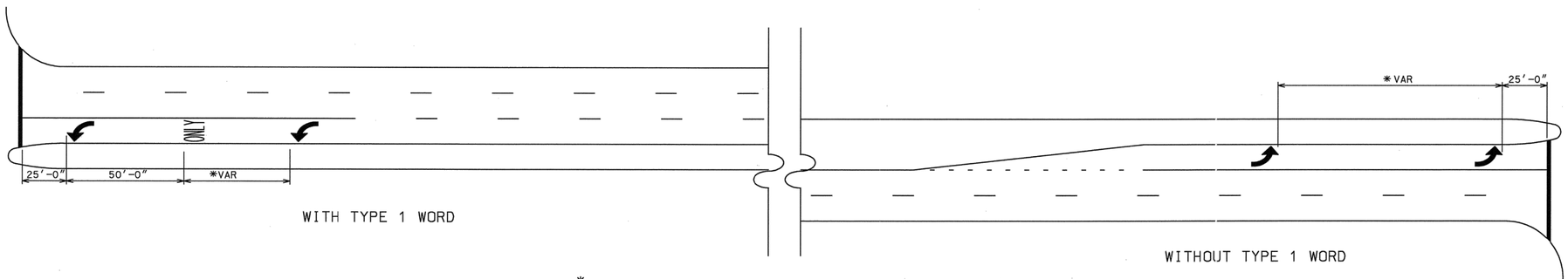
EXIT RAMPS



WITH TYPE 1 WORD

WITHOUT TYPE 1 WORD

SHORT TURN LANES

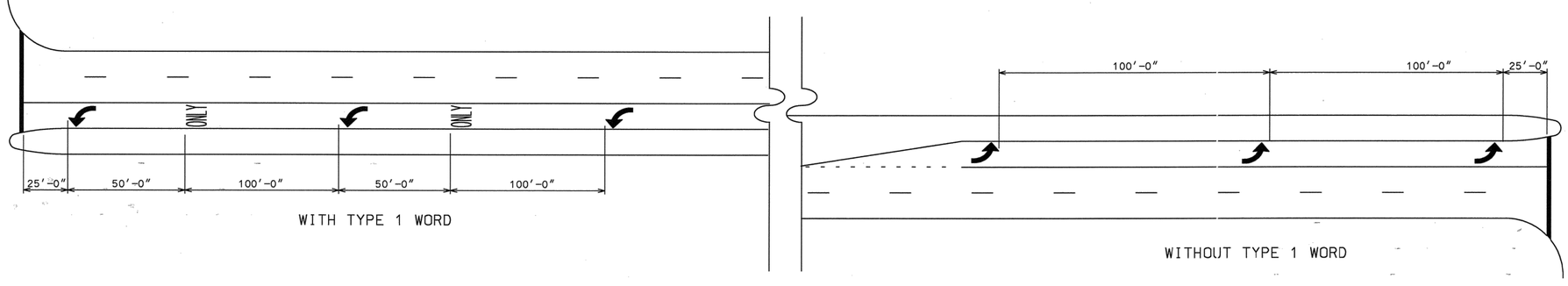


WITH TYPE 1 WORD

WITHOUT TYPE 1 WORD

*ADJUST TO MEET LOCAL CONDITIONS (NOT LESS THAN 50' NOR MORE THAN 100')

LONG TURN LANES



WITH TYPE 1 WORD

WITHOUT TYPE 1 WORD

GENERAL NOTES:

1. SPACING OF TYPE 2 ARROW IS REPRESENTATIVE OF SPACING FOR TYPE 1, TYPE 3, TYPE 4, & TYPE 5 ARROWS.
2. ALL TURNING LANES SHALL HAVE A MINIMUM OF 2 ARROWS.
3. GROUND MOUNTED OR OVERHEAD SIGNING SHALL BE SUPPLEMENTED BY TYPE 1 WORD.

BID SET

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

ROBERTS CIVIL ENGINEERING
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CONSTRUCTION DETAILS

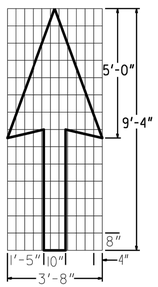
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

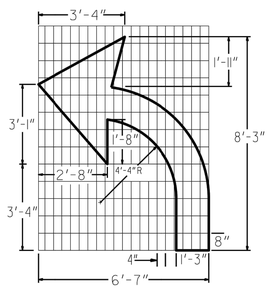
DATE: 04/28/22
PROJECT NUMBER: 21527
DRAWN BY: DJB
CHECKED BY: JLV
SCALE: NTS (FOR 24"X36" PLOT)

SHEET: D3

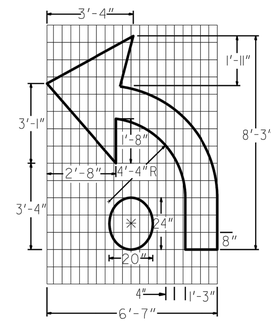
c:\roberts civil engineering\rce - dataice civil projects sav\2021\21527-effingham tspl\at intersections\civil design\03-acad\1-ib - I-5 - I-80\s-3-subc helmey rd at sees details.dwg, plotted 4/18/2022 10:17 PM by jessica vick



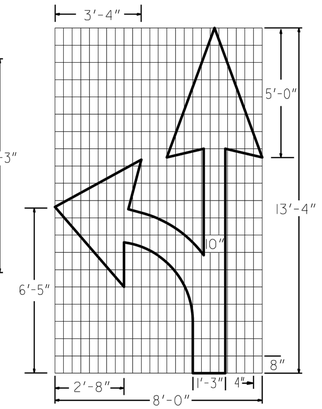
PAVEMENT MARKING, ARROW, TYPE 1
WHITE



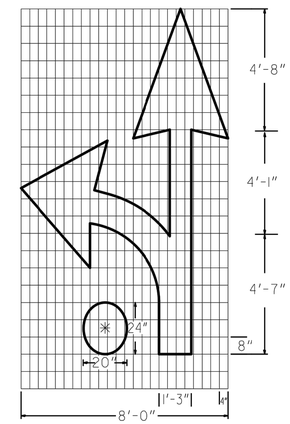
PAVEMENT MARKING, ARROW, TYPE 2
WHITE



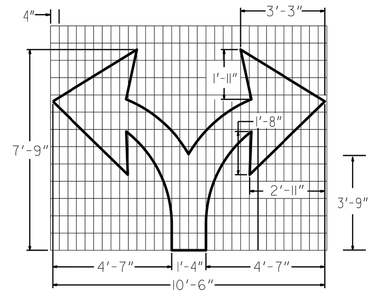
PAVEMENT MARKING, ARROW, TYPE 2A
WHITE



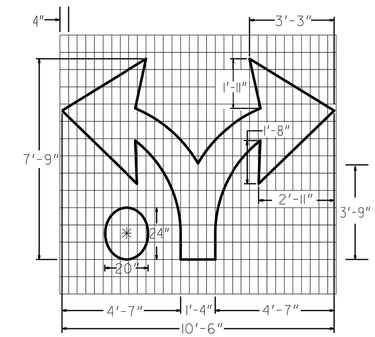
PAVEMENT MARKING, ARROW, TYPE 3
WHITE



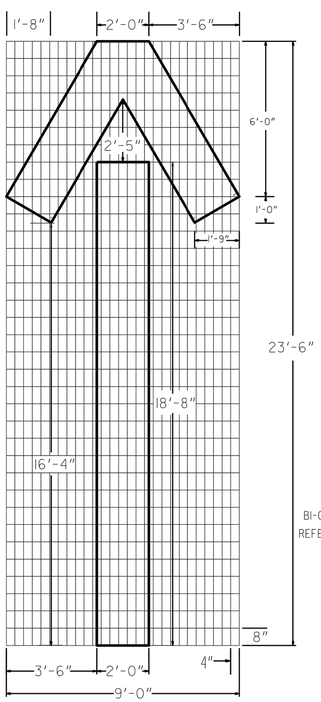
PAVEMENT MARKING, ARROW, TYPE 3A
WHITE



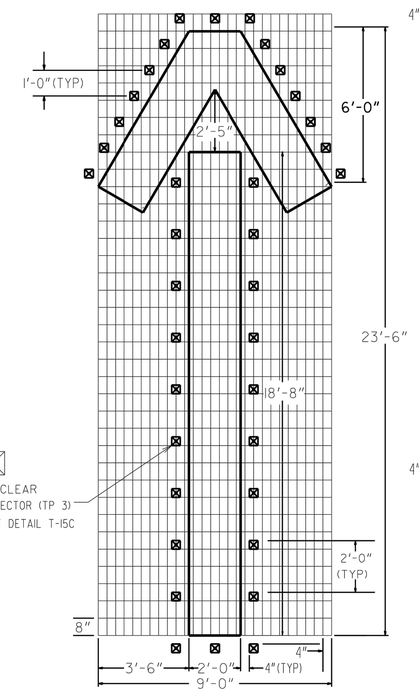
PAVEMENT MARKING, ARROW, TYPE 5
WHITE



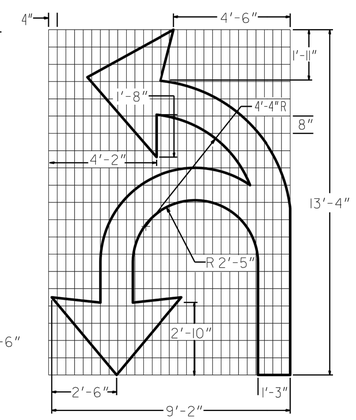
PAVEMENT MARKING, ARROW, TYPE 5A
WHITE



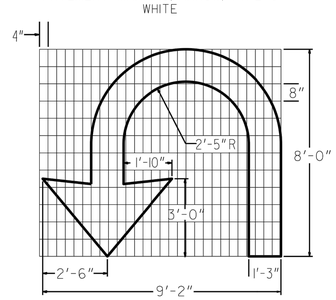
PAVEMENT MARKING, ARROW, TYPE 4
WHITE



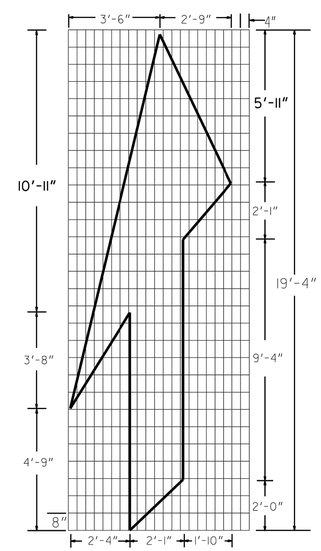
PAVEMENT MARKING, ARROW, WRONG WAY
WHITE



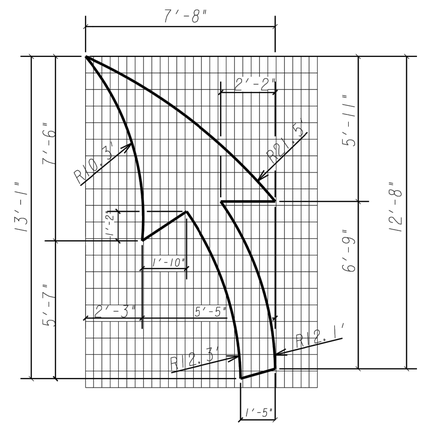
PAVEMENT MARKING, ARROW, TYPE 6
WHITE



PAVEMENT MARKING, ARROW, TYPE 7
WHITE



PAVEMENT MARKING, ARROW, TYPE 8
WHITE



PAVEMENT MARKING, ARROW, TYPE 9
WHITE (MINI ROUNDABOUTS)

NOTES
1. PAVEMENT MARKING ARROWS WITH A DOT (2A, 3A, 5A) SHALL BE USED ALONG MULTI-LANE ROUNDABOUT APPROACHES ALONG THE INSIDE LANE ONLY

BID SET

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

ROBERTS
CIVIL ENGINEERING
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CONSTRUCTION DETAILS

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

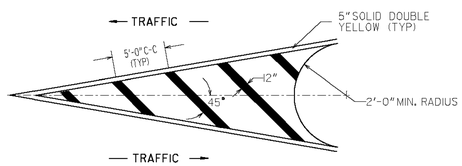
PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21527
DRAWN BY: DJB
CHECKED BY: JLV
SCALE: NTS (FOR 24"X36" PLOT)

SHEET: D4

z:\sdf\roberts civil engineering\rce - i-5\rce civil projects sav\2021\21527-effingham lapiat intersections\civil design\03-saud\4b - i-5 - i-95\i-5 south; halfway rd at sees details.dwg, plotted 4/18/2022 10:17 PM by jessica vick

DETAIL "A"(YELLOW)



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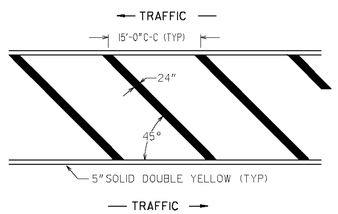

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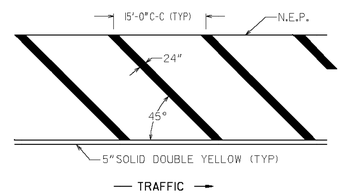

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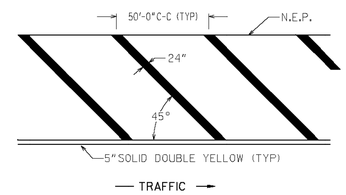

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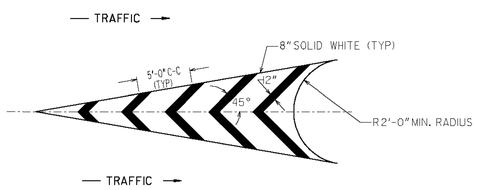

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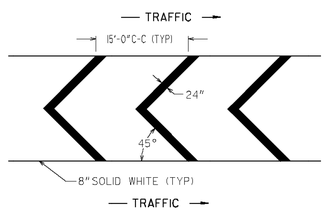

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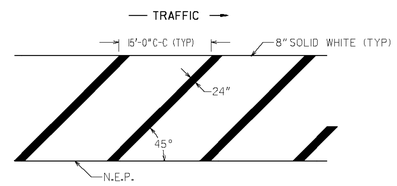

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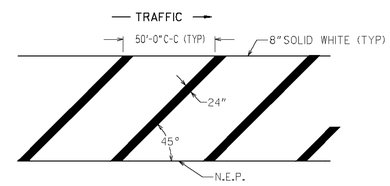

GENERAL NOTES:

1. FOR YELLOW STRIPING, THE SQUARE YARDS SHOWN ON PLAN, SUMMARY AND DETAILED ESTIMATE SHEETS INCLUDE THE AREA WITHIN THE BORDERS AND THE 5" SOLID DOUBLE YELLOW BORDER.
2. FOR WHITE STRIPING, THE SQUARE YARDS SHOWN ON PLAN, SUMMARY AND DETAILED ESTIMATE SHEETS INCLUDES THE AREA WITHIN THE BORDERS AS WELL AS THE 8" SOLID WHITE BORDER.

BID SET

REVISIONS
04/06/22: DRIVES, ADDL STORM, DEMO, ETC
04/18/22: 2" OVERLAY

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CONSTRUCTION DETAILS

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/28/22
PROJECT NUMBER: 21527
DRAWN BY: DJB
CHECKED BY: JLV
SCALE: NTS (FOR 24"X36" PLOT)

D5

SHEET:

c:\ccf\roberts civil engineering\rce - data\rce civil projects sav\2021\21527-effingham tspost intersections\civil design\03-acad\db_i-5 - 180-5 ludlc helmey rd at sees details.dwg, plotted 4/18/2022 10:18 PM by jessica vock

EROSION CONTROL PLANS

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS

PREPARED FOR:
EFFINGHAM COUNTY
804 S Laurel Street, Springfield, GA 31329
EFFINGHAM COUNTY
912.754.2123

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CIVIL ENGINEERING
WWW.ROBERTSCIVILENGINEERING.COM

301 SEA ISLAND ROAD, SUITE 10
ST. SIMONS ISLAND, GA 31522
912-638-9681

6001 CHATHAM CENTER DRIVE, SUITE 255
SAVANNAH, GA 31405
912-298-7006

14600 WHIRLWIND AVENUE, SUITE 119A
JACKSONVILLE, FL 32218
904-741-0099

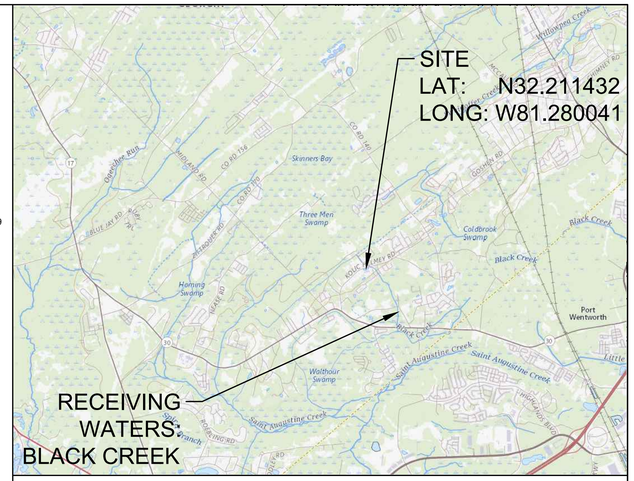
4000 FABER PLACE DRIVE, SUITE 300
NORTH CHARLESTON, SC 29405
843-323-4224

811 Know what's below. Call before you dig.

GEORGIA PROFESSIONAL ENGINEER No. 046602 PROFESSIONAL Jessica Vick CIVIL

04/26/22

CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699



VICINITY MAP NTS

EFFINGHAM COUNTY

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS

OWNER	ENGINEER
EFFINGHAM COUNTY	ROBERTS CIVIL ENGINEERING
CONTACT	CONTACT
ERIC LARSON	Jessica Vick, P.E.
EMAIL	EMAIL
ELarson@EffinghamCounty.org	jvick@robertscivilengineering.com
912.754.2123	912.977.5244

#	REVISIONS
1	
2	
3	
4	
5	

04-26-2022: ORIGINAL ISSUE DATE	RCE PROJECT NUMBER: 21527

CONTENTS

SHEET		DATE
E0	COVER SHEET	04/26/22
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E3	FINAL ESPC PLAN	04/26/22
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E5	ESPC NOTES	04/26/22
E6	ESPC DETAILS	04/26/22
E7	ESPC DETAILS	04/26/22

COVER

NOTE:

THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPS WITHIN 7 DAYS AFTER INSTALLATION.

NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMIT.

AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPS WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.

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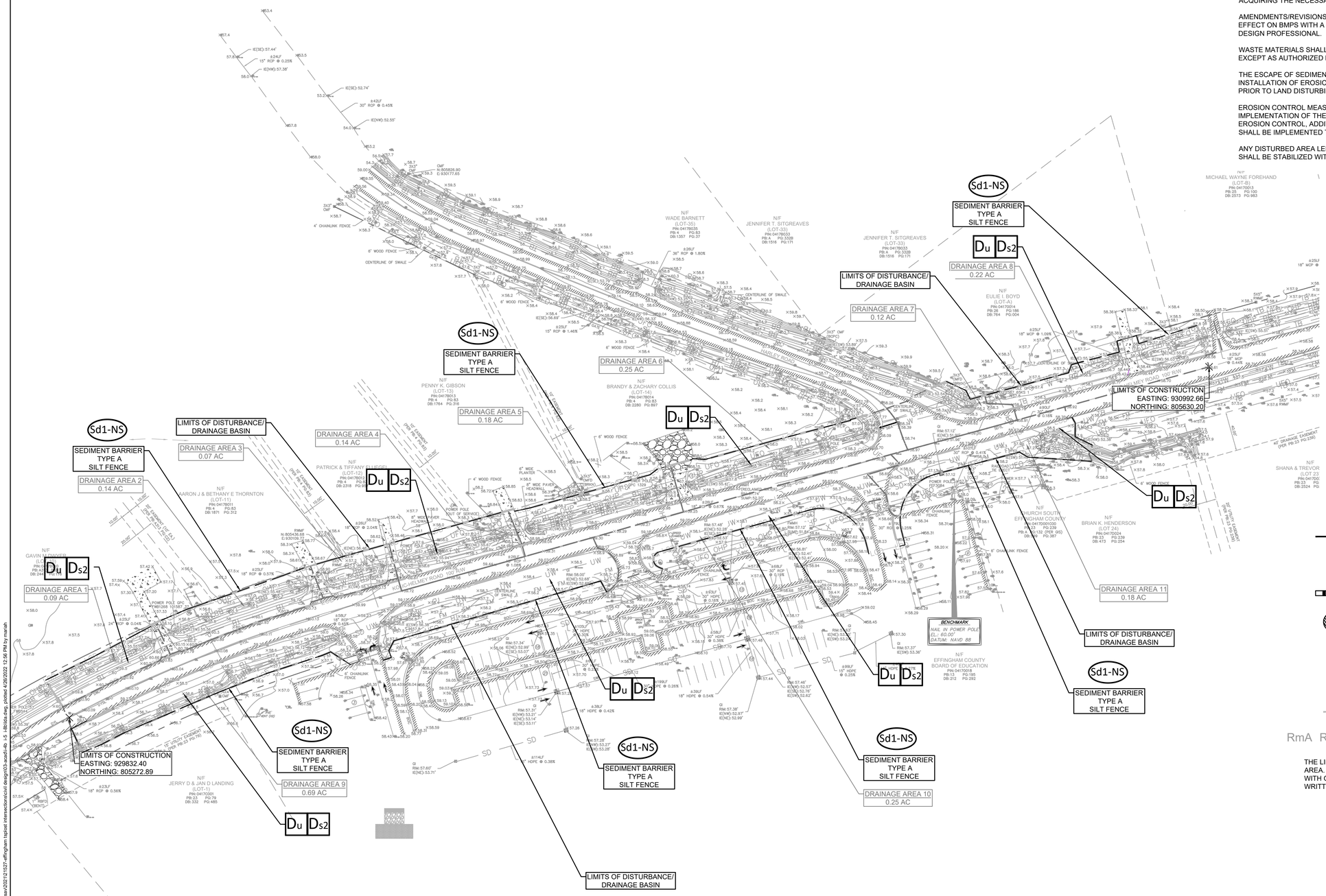
ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.



ES&PC LEGEND

Sd1-NS	SEDIMENT BARRIER AS NOTED
Sd4-C	TEMPORARY SEDIMENT BASIN
Cd-Hb	CHECK DAM STRAW BALES
Sd2-F	INLET SEDIMENT TRAP FILTER FABRIC AND FRAME
Du	DUST CONTROL
Ds2	TEMPORARY SEEDING
LOD	LIMIT OF DISTURBANCE
RmA Rigdon-Mascotte	SOILS

THE LIMIT OF DISTURBANCE DOES NOT REFLECT THE CLEARING AREA. CLEARING AND TREE REMOVAL SHALL BE COORDINATED WITH OWNER. NO TREES SHALL BE REMOVED WITHOUT THE WRITTEN CONSENT OF OWNER.

Know what's below. Call before you dig.

N

0' 50' 100'
GRAPHIC SCALE
1" = 50'

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 046602 CA

04/26/22
CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699

REVISIONS

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INITIAL ESPC PLAN

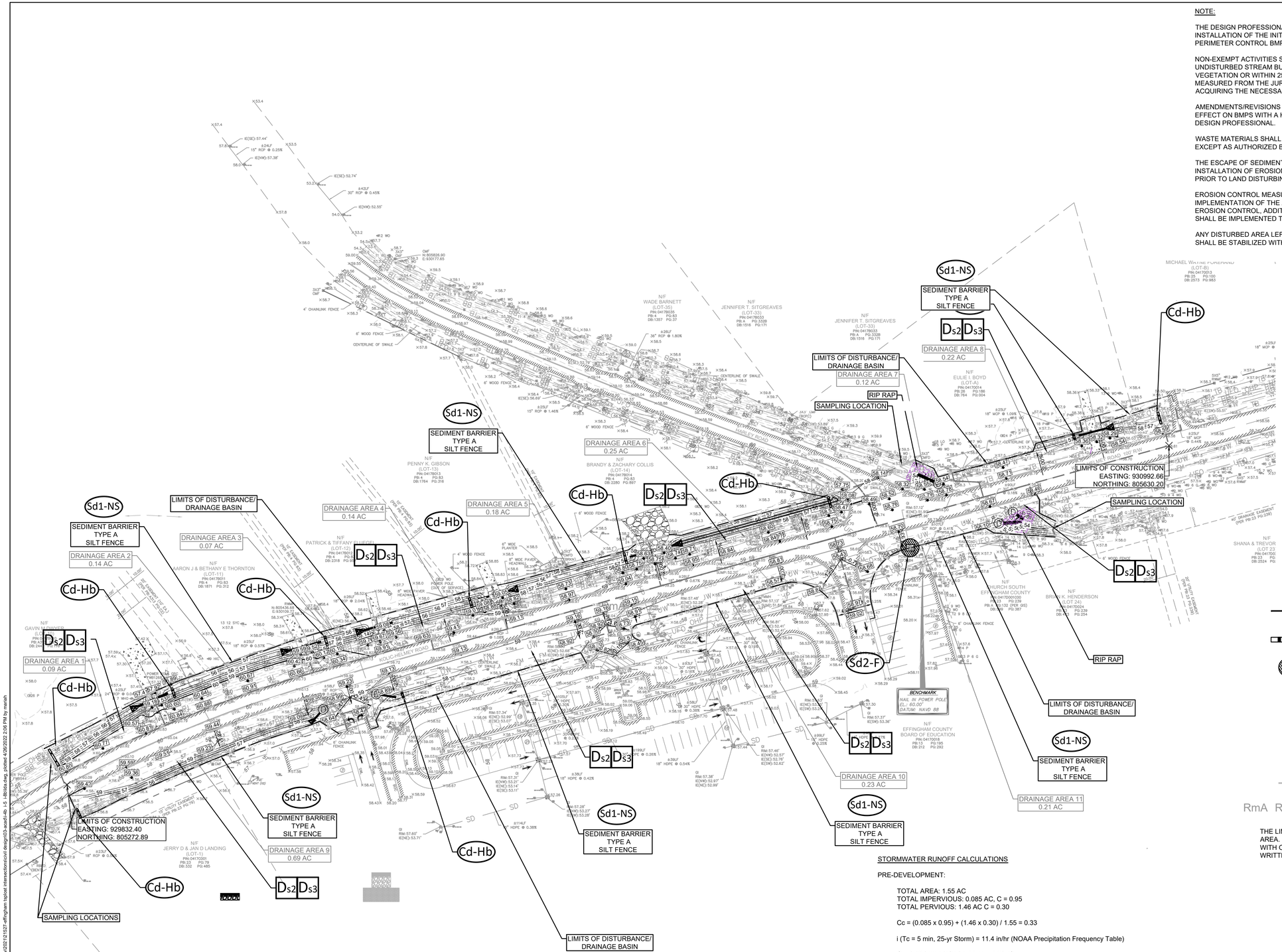
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/26/22
PROJECT NUMBER: 21527
DRAWN BY: MDP
CHECKED BY: JLV
SCALE: 1":50' (FOR 24"X36" PLOT)

SHEET: E1

c:\ot\roberts civil engineering\roa - datavrca civil projects sav\2021\21527-effingham bipilot intersections\civil design\03-sesdf\-4b_i-5_ridb\ds.dwg, plotted 4/26/2022 12:56 PM by mariah



NOTE:

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NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMIT.

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STORMWATER RUNOFF CALCULATIONS

PRE-DEVELOPMENT:

TOTAL AREA: 1.55 AC
TOTAL IMPERVIOUS: 0.085 AC, C = 0.95
TOTAL PERVIOUS: 1.46 AC C = 0.30

Cc = (0.085 x 0.95) + (1.46 x 0.30) / 1.55 = 0.33

i (Tc = 5 min, 25-yr Storm) = 11.4 in/hr (NOAA Precipitation Frequency Table)

Q = 0.33 * 11.4 in/hr * 1.55 ac = 5.83 cfs

POST-DEVELOPMENT:

TOTAL AREA: 1.55 AC
TOTAL IMPERVIOUS: 0.61 AC C = 0.95 (GSMM Table)
TOTAL PERVIOUS: 0.94 AC C = 0.30 (GSMM Table)

Cc = (0.61 x 0.95) + (0.94 x 0.30) / 1.55 = 0.55

i (Tc = 5 min, 25-yr Storm) = 11.4 in/hr (NOAA Precipitation Frequency Table)

Q = 0.55 * 11.4 in/hr * 1.55 ac = 9.72 cfs

ES&PC LEGEND

Sd1-NS	SEDIMENT BARRIER AS NOTED
Cd-Hb	CHECK DAM STRAW BALES
Sd2-F	INLET SEDIMENT TRAP FILTER FABRIC AND FRAME
	RIP RAP FOR STORM OUTLET
Ds2	TEMPORARY SEEDING
Ds3	PERMANENT SEEDING
LOD	LIMIT OF DISTURBANCE
RmA Rigdon-Mascotte	SOILS

THE LIMIT OF DISTURBANCE DOES NOT REFLECT THE CLEARING AREA. CLEARING AND TREE REMOVAL SHALL BE COORDINATED WITH OWNER. NO TREES SHALL BE REMOVED WITHOUT THE WRITTEN CONSENT OF OWNER.

Know what's below. Call before you dig.

N

0' 50' 100'
GRAPHIC SCALE
1" = 50'

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 046602 JESSICA VICK

04/26/22
CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699

REVISIONS

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INTERMEDIATE ESPC PLAN

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/26/22
PROJECT NUMBER: 21527
DRAWN BY: MDP
CHECKED BY: JLV
SCALE: 1":50' (FOR 24"X36" PLOT)

SHEET: E2

c:\sdr\roberts civil engineering\roe - datavice civil projects sav\2021\21527-effingham tapitol intersection\civil design\03-acad\ub-ub - b3 - i-95\b3a.dwg, plotted 4/26/2022 2:26 PM by mariah

NOTE:

THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPS WITHIN 7 DAYS AFTER INSTALLATION.

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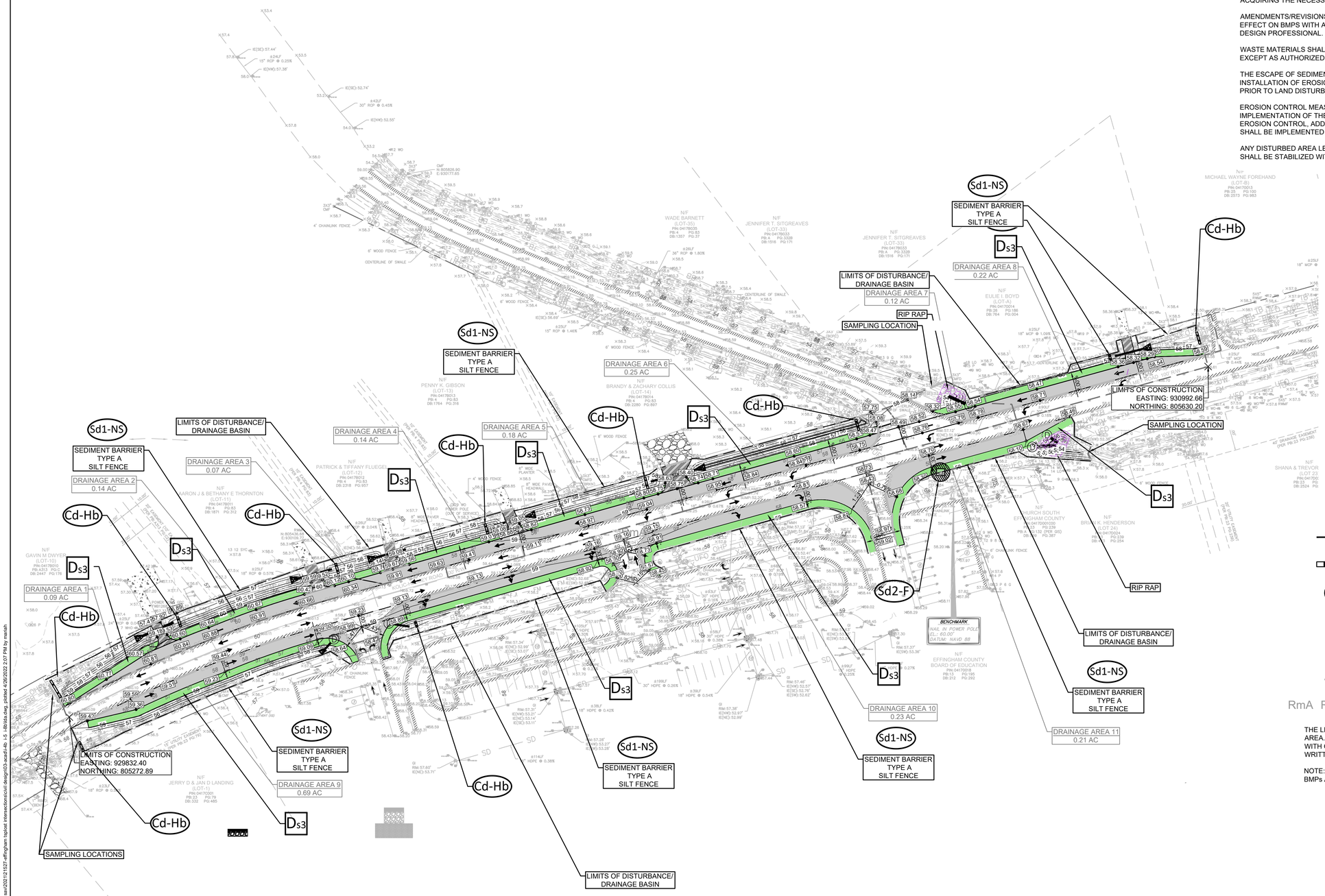

ES&PC LEGEND

Sd1-NS	SEDIMENT BARRIER AS NOTED
Cd-Hb	CHECK DAM STRAW BALES
Sd2-F	INLET SEDIMENT TRAP FILTER FABRIC AND FRAME
	RIP RAP FOR STORM OUTLET
Ds3	PERMANENT SEEDING
LOD	LIMIT OF DISTURBANCE
RmA Rigdon-Mascotte	SOILS

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NOTE: ONCE THE SITE HAS BEEN STABILIZED ALL TEMPORARY BMPs AND SEDIMENT TRAPS ARE TO BE REMOVED.

Know what's below. Call before you dig.

N

0' 50' 100'
GRAPHIC SCALE
1" = 50'

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 046602 JESSICA LYNN VICK

04/26/22

CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699

REVISIONS

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FINAL ESPC PLAN

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/26/22
PROJECT NUMBER: 21527
DRAWN BY: MDP
CHECKED BY: JLV
SCALE: 1":50' (FOR 24"X36" PLOT)

SHEET: E3

c:\sdf\roberts civil engineering\roe - data\roe civil projects sav\202121527-effingham tapitol intersection\civil design\03-acad\ldp - ls5 - hb\hb4.dwg, plotted 4/26/2022 2:07 PM by mariah

I-4B, I-5 & I-8B SOUTH EFFINGHAM ELEMENTARY SCHOOL
INITIAL - STORAGE PROVIDED IN EXISTING DRAINAGE DITCHES

DRAINAGE AREA 1
DISTURBED AREA: 0.09 AC.
REQUIRED STORAGE: 0.09 AC. X 67 C.Y./AC. = 6.03 C.Y. = 162.81 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 1:
ELEV. 56 = AREA: 1,095 S.F.
ELEV. 57 = AREA: 2,405 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (1,095 S.F. + 2,405 S.F.)/2 = 3,500 S.F./2 = 1,750 S.F. X 1' DEPTH = 1,750 C.F. STORAGE

1,750 C.F. > 162.81 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 2
DISTURBED AREA: 0.14 AC.
REQUIRED STORAGE: 0.14 AC. X 67 C.Y./AC. = 9.38 C.Y. = 253.26 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 2:
ELEV. 56 = AREA: 755 S.F.
ELEV. 57 = AREA: 3,695 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (755 S.F. + 3,695 S.F.)/2 = 4,450 S.F./2 = 2,225 S.F. X 1.0' DEPTH = 2,225 C.F. STORAGE

2,225 C.F. > 759.78 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 3
DISTURBED AREA: 0.07 AC.
REQUIRED STORAGE: 0.07 AC. X 67 C.Y./AC. = 4.69 C.Y. = 126.63 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 3:
ELEV. 57 = AREA: 401 S.F.
ELEV. 58 = AREA: 1,733 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (401 S.F. + 1,733 S.F.)/2 = 2,134 S.F./2 = 1,067 S.F. X 1.0' DEPTH = 1,067 C.F. STORAGE

1,067 C.F. > 759.78 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 4
DISTURBED AREA: 0.14 AC.
REQUIRED STORAGE: 0.14 AC. X 67 C.Y./AC. = 9.38 C.Y. = 253.26 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 4:
ELEV. 56 = AREA: 361 S.F.
ELEV. 58 = AREA: 2,393 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (361 S.F. + 2,393 S.F.)/2 = 2,754 S.F./2 = 1,377 S.F. X 2' DEPTH = 2,754 C.F. STORAGE

2,754 C.F. > 253.26 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 5
DISTURBED AREA: 0.18 AC.
REQUIRED STORAGE: 0.18 AC. X 67 C.Y./AC. = 12.06 C.Y. = 325.62 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 5:
ELEV. 56 = AREA: 817 S.F.
ELEV. 58 = AREA: 3,148 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (817 S.F. + 3,148 S.F.)/2 = 1,165 S.F./2 = 582.5 S.F. X 2' DEPTH = 1,165 C.F. STORAGE

1,165 C.F. > 325.62 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 6
DISTURBED AREA: 0.25 AC.
REQUIRED STORAGE: 0.25 AC. X 67 C.Y./AC. = 16.75 C.Y. = 452.25 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 6:
ELEV. 56 = AREA: 695 S.F.
ELEV. 58 = AREA: 10,043 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (695 S.F. + 10,043 S.F.)/2 = 10,738 S.F./2 = 5,369 S.F. X 2' DEPTH = 10,738 C.F. STORAGE

10,738 C.F. > 452.25 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 7
DISTURBED AREA: 0.12 AC.
REQUIRED STORAGE: 0.12 AC. X 67 C.Y./AC. = 8.04 C.Y. = 217.08 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 7:
ELEV. 55 = AREA: 3,375 S.F.
ELEV. 57 = AREA: 5,838 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (3,375 S.F. + 5,838 S.F.)/2 = 9,213 S.F./2 = 4,606.5 S.F. X 2' DEPTH = 9,213 C.F. STORAGE

9,213 C.F. > 217.08 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 8
DISTURBED AREA: 0.22 AC.
REQUIRED STORAGE: 0.22 AC. X 67 C.Y./AC. = 14.74 C.Y. = 397.98 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 8:
ELEV. 56 = AREA: 66 S.F.
ELEV. 58 = AREA: 2,180 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (66 S.F. + 2,180 S.F.)/2 = 2,246 S.F./2 = 1,123 S.F. X 2.0' DEPTH = 2,246 C.F. STORAGE

2,246 C.F. > 397.98 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 9
DISTURBED AREA: 0.69 AC.
REQUIRED STORAGE: 0.69 AC. X 67 C.Y./AC. = 46.23 C.Y. = 1,248.21 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 9:
ELEV. 55 = AREA: 36 S.F.
ELEV. 56.5 = AREA: 2,485 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (36 S.F. + 2,485 S.F.)/2 = 2,521 S.F./2 = 1,260.5 S.F. X 1.5' DEPTH = 1,890.75 C.F. STORAGE

1,890.75 C.F. > 1,248.21 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

INITIAL - STORAGE PROVIDED IN EXISTING DRAINAGE DITCHES (CONTINUED)

DRAINAGE AREA 11
DISTURBED AREA: 0.18 AC.
REQUIRED STORAGE: 0.18 AC. X 67 C.Y./AC. = 12.06 C.Y. = 325.62 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 11:
ELEV. 54 = AREA: 690 S.F.
ELEV. 56 = AREA: 1,814 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (690 S.F. + 1,814 S.F.)/2 = 2,504 S.F./2 = 1,252 S.F. X 2.0' DEPTH = 2,504 C.F. STORAGE

2,504 C.F. > 325.62 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

TEMPORARY SEDIMENT STORAGE REQUIREMENTS - Sd1-NS

DRAINAGE AREA 10
STORAGE PROVIDED DISTURBED AREA: 0.25 AC.
REQUIRED STORAGE: 0.25 AC. X 67 C.Y./AC. = 5.36 C.Y. = 452.25 C.F.

STORAGE PROVIDED AGAINST SILT FENCE (BASED ON ONE ROW)
[$\frac{1}{2}$ (MAX. DIST. STORAGE FROM SILT FENCE) $\frac{2}{3}$ (HEIGHT OF SILT FENCE IN FT.)] X L.F. OF SILT FENCE
[$\frac{1}{2}$ (3.5)(1.5) X 270 L.F. (NON-SENSITIVE-1 ROW) = 2.625 X 270 L.F. = 708.75 C.F.

708.75 C.F. > 452.25 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

I-4B, I-5 & I-8B SOUTH EFFINGHAM ELEMENTARY SCHOOL
INTERMEDIATE AND FINAL - STORAGE PROVIDED IN PROPOSED DRAINAGE DITCHES

DRAINAGE AREA 1
DISTURBED AREA: 0.09 AC.
REQUIRED STORAGE: 0.09 AC. X 67 C.Y./AC. = 6.03 C.Y. = 162.81 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 1:
ELEV. 55.5 = AREA: 461 S.F.
ELEV. 57 = AREA: 2,159 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (461 S.F. + 2,159 S.F.)/2 = 2,620 S.F./2 = 1,310 S.F. X 1.5' DEPTH = 1,965 C.F. STORAGE

1,965 C.F. > 162.81 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 2
DISTURBED AREA: 0.14 AC.
REQUIRED STORAGE: 0.14 AC. X 67 C.Y./AC. = 9.38 C.Y. = 253.26 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 2:
ELEV. 55.5 = AREA: 144.50 S.F.
ELEV. 57 = AREA: 2,631.5 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (144.50 S.F. + 2,631.5 S.F.)/2 = 2,776 S.F./2 = 1,388 S.F. X 1.5' DEPTH = 2,082 C.F. STORAGE

2,082 C.F. > 253.26 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 3
DISTURBED AREA: 0.07 AC.
REQUIRED STORAGE: 0.07 AC. X 67 C.Y./AC. = 4.69 C.Y. = 126.63 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 3:
ELEV. 55.5 = AREA: 103 S.F.
ELEV. 57 = AREA: 436 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (103 S.F. + 436 S.F.)/2 = 539 S.F./2 = 269.5 S.F. X 1.5' DEPTH = 404.25 C.F. STORAGE

404.25 C.F. > 126.63 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 4
DISTURBED AREA: 0.14 AC.
REQUIRED STORAGE: 0.14 AC. X 67 C.Y./AC. = 9.38 C.Y. = 253.26 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 4:
ELEV. 56 = AREA: 387 S.F.
ELEV. 58 = AREA: 1,345 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (387 S.F. + 1,345 S.F.)/2 = 1,732 S.F./2 = 866 S.F. X 2.0' DEPTH = 1,736 C.F. STORAGE

1,736 C.F. > 253.26 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 5
STORAGE PROVIDED DISTURBED AREA: 0.18 AC.
REQUIRED STORAGE: 0.18 AC. X 67 C.Y./AC. = 12.06 C.Y. = 325.62 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 5:
ELEV. 56 = AREA: 534 S.F.
ELEV. 58 = AREA: 1,775 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (534 S.F. + 1,775 S.F.)/2 = 2,309 S.F./2 = 1154.5 S.F. X 2.0' DEPTH = 2,309 C.F. STORAGE

2,309 C.F. > 325.62 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 6
DISTURBED AREA: 0.25 AC.
REQUIRED STORAGE: 0.25 AC. X 67 C.Y./AC. = 16.75 C.Y. = 452.25 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 6:
ELEV. 55.5 = AREA: 367 S.F.
ELEV. 57 = AREA: 2,843 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (367 S.F. + 2,843 S.F.)/2 = 3,210 S.F./2 = 1,605 S.F. X 1.5' DEPTH = 2,407 C.F. STORAGE

2,407 C.F. > 452.25 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 7
DISTURBED AREA: 0.12 AC.
REQUIRED STORAGE: 0.12 AC. X 67 C.Y./AC. = 8.04 C.Y. = 217.08 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 7:
ELEV. 54 = AREA: 81 S.F.
ELEV. 57 = AREA: 5,590 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (81 S.F. + 5,590 S.F.)/2 = 5,671 S.F./2 = 2,835.10 S.F. X 3' DEPTH = 8,506.5 C.F. STORAGE

8,506.5 C.F. > 217.08 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 8
DISTURBED AREA: 0.22 AC.
REQUIRED STORAGE: 0.22 AC. X 67 C.Y./AC. = 14.74 C.Y. = 397.98 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 8:
ELEV. 56 = AREA: 53 S.F.
ELEV. 58 = AREA: 1,565 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (53 S.F. + 1,565 S.F.)/2 = 1,618 S.F./2 = 809 S.F. X 2.0' DEPTH = 1,618 C.F. STORAGE

1,618 C.F. > 397.98 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

INTERMEDIATE AND FINAL - STORAGE PROVIDED IN PROPOSED DRAINAGE DITCHES (CONTINUED)

DRAINAGE AREA 11
DISTURBED AREA: 0.21 AC.
REQUIRED STORAGE: 0.21 AC. X 67 C.Y./AC. = 14.07 C.Y. = 379.89 C.F.

STORAGE PROVIDED BY DRAINAGE DITCH 14:
ELEV. 54 = AREA: 690 S.F.
ELEV. 56 = AREA: 1,814 S.F.
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = C.F. (AVERAGE END METHOD)
AREA: (690 S.F. + 1,814 S.F.)/2 = 2,504 S.F./2 = 1,252 S.F. X 2.0' DEPTH = 2,504 C.F. STORAGE

2,504 C.F. > 379.89 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

TEMPORARY SEDIMENT STORAGE REQUIREMENTS - Sd1-NS

DRAINAGE AREA 9
DISTURBED AREA: 0.69 AC.
REQUIRED STORAGE: 0.69 AC. X 67 C.Y./AC. = 46.23 C.Y. = 1,248.21 C.F.

STORAGE PROVIDED AGAINST SILT FENCE (BASED ON ONE ROW)
[$\frac{1}{2}$ (MAX. DIST. STORAGE FROM SILT FENCE) $\frac{2}{3}$ (HEIGHT OF SILT FENCE IN FT.)] X L.F. OF SILT FENCE
[$\frac{1}{2}$ (3.5)(1.5) X 588 L.F. (NON-SENSITIVE-1 ROW) = 2.625 X 588 L.F. = 1,543.5 C.F.

1,543.5 C.F. > 1,248.21 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

DRAINAGE AREA 10
DISTURBED AREA: 0.23 AC.
REQUIRED STORAGE: 0.23 AC. X 67 C.Y./AC. = 15.41 C.Y. = 416.07 C.F.

STORAGE PROVIDED AGAINST SILT FENCE (BASED ON ONE ROW)
[$\frac{1}{2}$ (MAX. DIST. STORAGE FROM SILT FENCE) $\frac{2}{3}$ (HEIGHT OF SILT FENCE IN FT.)] X L.F. OF SILT FENCE
[$\frac{1}{2}$ (3.5)(1.5) X 270 L.F. (NON-SENSITIVE-1 ROW) = 2.625 X 270 L.F. = 708.75 C.F.

708.75 C.F. > 416.07 C.F. THEREFORE ADEQUATE STORAGE IS PROVIDED

GEORGIA REGISTERED No. 046602 PROFESSIONAL ENGINEER Jessica Vick CA
04/26/22
CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699

REVISIONS

ROBERTS CIVIL ENGINEERING
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WWW.ROBERTSCIVILENGINEERING.COM

SEDIMENT STORAGE CALCULATIONS

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/26/22
PROJECT NUMBER: 21527
DRAWN BY: MDP
CHECKED BY: JLV
SCALE: NTS

SHEET: E4

1. The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1 of the year in which the land-disturbing activity was permitted. Effective January 1, 2021. (The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed)

This checklist is for an Infrastructure Development.

2. Level II certification number issued by the Commission, signature and seal of the certified design professional. (Signature, seal and Level II number must be on each sheet pertaining to ES&PC Plan or the Plan will not be reviewed)

Shown on each ES&PC plan sheets.

3. The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls.

Eric Larson, 912-754-2123

4. Provide the name, address, email address and phone number of the primary permittee.

Eric Larson
804 S Laurel Street
Springfield, GA 31329
ELarson@EffinghamCounty.org
912-754-2123

5. Note total and disturbed acreage of the project or phase under construction.

Total Project Acreage: 1.55 Acres
Disturbed Acreage: 1.55 Acres

6. Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.

Latitude: N32.211432, Longitude: W81.280041

7. Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.

Shown on cover and plan sheets.

8. Description of the nature of construction activity.

The existing site is a developed road with roadside drainage ditches. Activity will include an expansion of road lanes.

9. Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.

Vicinity Map shown on Cover

10. Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.

Black Creek

11. Design professional's certification statement and signature that the site was visited prior to development of the ES&PC Plan as stated on Part IV page 21 of the permit.

"I certify under penalty of law that this Plan was prepared after a site visit to the location described herein by myself or my authorized agent, under my supervision."

Jessica Vick — Certified By — 0000062699 — Certification #

12. Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on Part IV page 20 of the permit.*

"I certify that the Permittee's Erosion, Sedimentation and Pollution Control Plan provides for an appropriate and comprehensive system of Best Management Practices required by the Georgia Water Quality Control Act and the document "Manual for Erosion and Sediment Control in Georgia" (Manual) published by the Georgia Soil and Water Conservation Commission as of January 1 of the year in which land-disturbing activity was permitted, provides for the sampling of the receiving water(s) or the sampling of the storm water outfalls and that the designed system of best management practice and sampling methods is expected to meet the requirements contained in the General NPDES Permit No. GAR 100002."

Jessica Vick — Certified By

13. Design professional certification statement and signature that the permittee's ES&PC Plan provides for representative sampling as stated on Part IV.D.6.c.(3) page 37 of the permit as applicable.*

"I certify that the Permittee's Erosion, Sedimentation and Pollution Control Plan provides for the monitoring of: (a) all perennial and intermittent streams and other water bodies shown on teh USGS topographic map and all other field verified perennial and intermittent streams and other water bodies, or (b) where any such specific identified perennial or intermittent stream and other water body is not proposed to be sampled, I have determined in my professional judgement, utilizing the factors required in the General NPDES Permit No. GAR 100002, that the increase in the turbidity of each specific identified sampled receiving water will be representative of the increase in the turbidity of a specific identified un-sampled receiving water."

Jessica Vick — Certified By

14. Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation of the initial sediment storage requirements, perimeter control BMPs, and sediment basins within 7 days after installation." in accorance wiht Part IV.A.5 page 26 of the permit.*

Shown on Plan Sheet

15. Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation or within 25-feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."

Shown on Plan Sheet

16. Provide a description of any buffer encroachments and indicate whether a buffer variance is required.

N/A

17. Clearly note the statement that "Amendments/ revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."*

Shown on Plan Sheet

18. Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a section 404 permit."*

Shown on Plan Sheet

19. Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."

Shown on Plan Sheet

20. Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."

Shown on Plan Sheet

21. Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."

Shown on Plan Sheet

22. Any construction activity which discharges storm water into an impaired Stream Segment, or within 1 linear mile upstream of and within the same watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C. of the Permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment.*

N/A

23. If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in item 22 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan.*

N/A

24. BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the drum at the construction site is prohibited.*

Washout of the drum and washdown of tools, concrete mixer chutes, hoppers, and the rear of vehicles at the construction site is prohibited.

25. Provide BMPs for the remediation of all petroleum spills and leaks.

–Local, State, and manufacturer's recommended methods for spill cleanup will be clearly posted and procedures will be made available to personnel.
–Materials and equipment for spill cleanup shall be kept in the material storage area (i.e. brooms, mops, rags, goggles, gloves, cat litter, etc.)
–Spill prevention practices and procedures will be reviewed after a spill and adjusted as necessary to prevent future spills.
–All spills shall be cleaned up immediately upon discovery. All spills will be reported as required by Local, State, and Federal Regulations.
–For spills that impacts surface water (Leave a sheen on Surface water) requires the NRC (National Response Center) to be contacted within 24 hrs 800-424-8802
–Spills greater than 25 gallons with no surface water impacts require the Georgia EPD to be contacted within 24 hrs.
–Spills less than 25 gallons with no surface water impacts require local authorities to be contacted as required.
–For spills of unknown amount, the National Center (NRC) will be contacted within 24 hours at 800-424-8802.
–The contractor shall notify the licensed professional who prepared this plan if more than 1320 gallons of petroleum is stored onsite (this includes capacities of equipment) or if any piece of equipment has a capacity greater than 660 gallons. The contractor will need a Spill Prevention Containment and Countermeasures Plan prepared by the licensed professional.

26. Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed.*

Permanent grassing will continue to reduce storm water pollutants after the completion of construction.

27. Description of practices to provide cover for building materials and building products on site.*

Plastic sheeting will be used to cover building materials and building products on site.

29. Description of the practices that will be used to reduce the pollutants in storm water discharges.*

Product Specific Practices:
Petroleum Based Products – Containers for products such as fuels, lubricants and tars will be inspected daily for leaks and spills. This includes on-site vehicle and machinery daily inspections and regular preventative maintenance of such equipment. Equipment maintenance areas will be located away from state water, natural drains and storm water drainage inlets. In addition, temporary fueling tanks shall have a secondary containment liner to prevent/minimize site contamination. Discharge of oils, fuels and lubricants is prohibited. Proper disposal methods will include collection in a suitable container and disposal as required by local and State regulations.
Paints/Finishes/Solvents – All products will be stored in tightly sealed original containers when not in use. Excess product will not be discharged to the storm water collection system. Excess product, materials used with these products and product containers will be disposed of according to manufacturers specifications and recommendations.
Concrete Truck washing – No concrete trucks will be allowed to wash out or discharge surplus concrete of drum wash water onsite.
Fertilizer/ Herbicides – These products will be applied at rates that do not exceed the manufacturer's specifications or above the guidelines set forth in the crop establishment or in the GSWCC Manual for Erosion and Sediment Control in Georgia. Any storage of these materials will be under roof in sealed containers.
Building Materials – No building or construction materials will be buried or disposed of onsite. All such material will be disposed of in proper waste disposal procedures. Equipment maintenance areas will be located away from state water, natural drains and storm water drainage inlets. In addition, temporary fueling tanks shall have a secondary containment liner to prevent/minimize site contamination.

30. Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).*

Shown on detail sheet

30. Provide requirements of inspections and record keeping by the primary permittee.*

Primary Permittee.

(1). Each day when any type of construction activity has taken place at a primary permittee's site, certified personnel provided by the primary permittee shall inspect: (a) all areas at the primary permittee's site where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment and (b) all locations at the primary permittee's site where vehicles enter or exit the site for evidence of off-site sediment tracking. These inspections must be conducted until a Notice of Termination is submitted.

(2). Measure and record rainfall within disturbed areas of the site that have not met final stabilization once every 24 hours except any non-working Saturday, non-working Sunday and non-working Federal holiday. The data collected for the purpose of compliance with this permit shall be representative of the monitored activity. Measurement of rainfall may be suspended if all areas of the site have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region.

(3). Certified personnel (provided by the primary permittee) shall inspect the following at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or on any non-working Saturday, non-working Sunday or any non-working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day, whichever occurs first): (a) disturbed areas of the primary permittee's construction site; (b) areas used by the primary permittee for storage of materials that are exposed to precipitation; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the primary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region, the permittee must comply with Part IV.D.4.a.(4). These inspections must be conducted until a Notice of Termination is submitted.

(4). Certified personnel (provided by the primary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is submitted to EPD) the areas of their sites that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s).

(5). Based on the results of each inspection, the site description and the pollution prevention and control measures identified in the Erosion, Sedimentation and Pollution Control Plan, the Plan shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as practical but in no case later than seven (7) calendar days following each inspection. The primary permittee must amend the Plan in accordance with Part IV.D.4.b.(5). when a secondary permittee notifies the primary permittee of any Plan deficiencies.

(6). A report of each inspection that includes the name(s) of certified personnel making each inspection, the date(s) of each inspection, construction phase (i.e., initial, intermediate or final), major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.a.(5). of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction site that has been phased has undergone final stabilization and a Notice of Termination is submitted to EPD. Such reports shall be readily available by end of the second business day and/or working day and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. Where the report does not identify an incident, the inspection report shall contain a statement that the best management practices are in compliance with the Erosion, Sedimentation and Pollution Control Plan. The report shall be signed in accordance with Part of this permit.

b. Secondary Permittee.

(1). Each day when any type of construction activity has taken place at a secondary permittee's site, certified personnel provided by the secondary permittee shall inspect: (a) all areas used by the secondary permittee where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment; and (b) all locations at the secondary permittee site where that permittee's vehicles enter or exit the site for evidence of off-site sediment tracking. These inspections must be conducted until a Notice of Termination is submitted. This paragraph is not applicable to utility companies and utility contractors if they are secondary permittees.

(2). Certified personnel (provided by the utility companies and utility contractors if they are secondary permittees) shall inspect the following each day any type of construction activity has taken place at the construction site: (a) areas of the construction site disturbed by the utility companies and utility contractors that have not undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region; (b) areas used by the utility companies and utility contractors for storage of materials that are exposed to precipitation that have not undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region or established a crop of annual vegetation and a seeding of target perennials appropriate for the region; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the utility companies and utility contractors'construction activities shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). This paragraph is not applicable to utility companies and utility contractors when they are secondary permittees performing service line installations or when conducting repairs on existing line installations.

(3). Certified personnel (provided by the secondary permittee) shall inspect the following at least once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or on any non-working Saturday, non-working Sunday or any non-working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day, whichever occurs first): (a) disturbed areas of the secondary permittee's construction site; (b) areas used by the secondary permittee for storage of materials that are exposed to precipitation; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the secondary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region, the permittee must comply with Part IV.D.4.b.(4). These inspections must be conducted until a Notice of Termination is submitted. This paragraph is not applicable to utility companies and utility contractors if they are secondary permittees.

(4). Certified personnel (provided by the secondary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is submitted to EPD) the areas of their sites that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s).

(5). Based on the results of each inspection, the secondary permittee must notify the primary permittee within 24–hours of any suspected BMP design deficiencies. The primary permittee must evaluate whether these deficiencies exist within 48–hours of such notice, and if these deficiencies are found to exist must amend the Plan in accordance with Part IV.C. of this permit to address those deficient BMPs within seven (7) days of being notified by the secondary permittee. When the Plan is amended, the primary permittee must notify and provide a copy of the amendment to all affected secondary permittee(s) within this seven (7) day period. The secondary permittees must implement any new Plan requirements affecting their site(s) within 48–hours of notification by the primary permittee.

(6). A report of each inspection that includes the name(s) of certified personnel making each inspection, the date(s) of each inspection, construction phase (i.e., initial, intermediate or final), major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.b.(5). of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site has undergone final stabilization and a Notice of Termination is submitted to EPD. Such reports shall be readily available by the end of the second business day and /or working day and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. Where the report does not identify any incidents, the inspection report shall contain a certification that the best management practices are in compliance with the Erosion, Sedimentation and Pollution Control Plan. The report shall be signed in accordance with Part V.G.2. of this permit. This paragraph is not applicable to utility companies and utility contractors if they are secondary permittees performing only service line installations or when conducting repairs on existing line installations.

c. Tertiary Permittee.

(1). Each day when any type of construction activity has taken place at a tertiary permittee's site, certified personnel provided by the tertiary permittee shall inspect: (a) all areas used by the tertiary permittee where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment; and (b) all locations at the tertiary permittee site where that permittee's vehicles enter or exit the site for evidence of off-site sediment tracking. These inspections must be conducted until a Notice of Termination is submitted. This paragraph is not applicable to utility companies and utility contractors performing only service line installations or when conducting repairs on existing line installations.

(2). Measure and record rainfall within disturbed areas of the site that have not met final stabilization once every 24 hours except any non-working Saturday, non-working Sunday and non-working Federal holiday. The data collected for the purpose of compliance with this permit shall be representative of the monitored activity. Measurement of rainfall may be suspended if all areas of the site have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region.

(3). Certified personnel (provided by the tertiary permittee) shall inspect at least the following once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or on any non-working Saturday, non-working Sunday or any nonworking Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day, whichever occurs first): (a) disturbed areas of the tertiary permittee's construction site; (b) areas used by the tertiary permittee for storage of materials that are exposed to precipitation; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the tertiary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region, the permittee must comply with Part IV.D.4.c.(4). These inspections must be conducted until a Notice of Termination is submitted. This paragraph is not applicable to utility companies and utility contractors performing only service line installations or when conducting repairs on existing line installations.

(4). Certified personnel (provided by the tertiary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is submitted to EPD) the areas of their sites that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). This paragraph is not applicable to utility companies and utility contractors performing only service line installations or when conducting repairs on existing line installations.

NAME:
Company Phone:
Address
GSWCC Level 1A Certification No. _____
_____ Signature

31. Provide complete requirements of sampling frequency and reporting of sampling results.*

d. Sampling Frequency.

(1). The primary permittee must sample in accordance with the Plan at least once for each rainfall event described below. For a qualifying event, the permittee shall sample at the beginning of any stormwater discharge to a monitored receiving water and/or from a monitored outfall location within forty-five (45) minutes or as soon as possible.

(2). However, where manual and automatic sampling are impossible (as defined in this permit), or are beyond the permittee's control, the permittee shall take samples as soon as possible, but in no case more than twelve (12) hours after the beginning of the stormwater discharge.

(3). Sampling by the permittee shall occur for the following qualifying events:

(a). For each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a stormwater discharge that occurs during normal business hours as defined in this permit after all clearing and grubbing operations have been completed, but prior to completion of mass grading operations, in the drainage area of the location selected as the representative sampling location;
State of Georgia Page 39 of 49 Department of Natural Resources Permit No. GAR100002 Environmental Protection Division

(b). In addition to (a) above, for each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a stormwater discharge that occurs during normal business hours as defined in this permit either 90 days after the first sampling event or after all mass grading operations have been completed, but prior to submittal of a NOT, in the drainage area of the location selected as the representative sampling location, whichever comes first;

(c). At the time of sampling performed pursuant to (a) and (b) above, if BMPs in any area of the site that discharges to a receiving water or from an outfall are not properly designed, installed and maintained, corrective action shall be defined and implemented within two (2) business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours* until the selected turbidity standard is attained, or until post-storm event inspections determine that BMPs are properly designed, installed and maintained;

(d). Where sampling pursuant to (a), (b) or (c) above is required but not possible (or not required because there was no discharge), the permittee, in accordance with Part IV.D.4.a.(6), must include a written justification in the inspection report of why sampling was not performed. Providing this justification does not relieve the permittee of any subsequent sampling obligations under (a), (b) or (c) above; and

(e). Existing construction activities, i.e., those that are occurring on or before the effective date of this permit, that have met the sampling required by (a) above shall sample in accordance with (b). Those existing construction activities that have met the sampling required by (b) above shall not be required to conduct additional sampling other than as required by (c) above.

*Note that the Permittee may choose to meet the requirements of (a) and (b) above by collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and allows for sampling at any time of the day or week.

E. Reporting

1. The applicable permittees are required to submit the sampling results to the EPD by the fifteenth day of the month following the reporting period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results on a more frequent basis. Sampling and analysis on a more frequent basis. Sampling and analysis of any stormwater discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to the EPD. Sampling reports must be submitted to EPD using the electronic submittal service provided by EPD. Sampling reports must be submitted to EPD until such time as a NOT is submitted in accordance with Part VI.

2. All sampling reports shall include the following information:

a. The rainfall amount, date, exact place and time of sampling or measurements;
b. The name(s) of the certified personnel who performed the sampling and measurements;
c. The date(s) analyses were performed;
d. The time(s) analyses were initiated;
e. The name(s) of the certified personnel who performed the analyses;
f. References and written procedures, when available, for the analytical techniques or methods used;
g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results;
h. Results which exceed 1000 NTU shall be reported as "exceeds 1000 NTU;" and
i. Certification statement that sampling was conducted as per the Plan.

3. All written correspondence required by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office of the EPD according to the schedule in Appendix A of this permit. The permittee shall retain a copy of the proof of submittal at the construction site or the proof of submittal shall be readily available at a designated location from commencement of construction until such time as a NOT is submitted in accordance with Part VI.

32. Provide complete details for retention of records as per Part IV.F. of the permit.*

1.The primary permittee shall retain the following records at the construction site or the records shall be readily available at a designated alternate location from commencement of construction until such time as a NOT is submitted in accordance with Part VI:

a. A copy of all Notices of Intent submitted to EPD;
b. A copy of the Erosion, Sedimentation and Pollution Control Plan required by this permit;
c. The design professional's report of the results of the inspection conducted in accordance with Part IV.A.5 of this permit;
d. A copy of all sampling information, results, and reports required by this permit;
e. A copy of all inspection reports generated in accordance with Part IV.D.4.a. of this permit;
f. A copy of all violation summaries and violation summary reports generated in accordance with Part III.D.2. of this permit; and
g. Daily rainfall information collected in accordance with Part IV.D.4.a.(2). of this permit.

2. Copies of all Notices of Intent, Notices of Termination, inspection reports, sampling reports (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) or other reports requested by EPD, Erosion, Sedimentation and Pollution Control Plans, records of all data used to complete the Notice of Intent be covered by this permit and all other records required by this permit shall be retained by the permittee who either produced or used it for a period of at least three years from the date that the NOT is submitted in accordance with Part VI of this permit. These records must be maintained at the permittee's primary place of business or at a designated alternative location once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at any time upon written notification to the permittee.

33.. Description of analytical methods to be used to collect and analyze the samples from each location.*

a. Sampling Requirements shall include the following:

(1). A USGS topographic map, a topographic map or a drawing (referred to as a topographic map) that is a scale equal to or more detailed than a 1:24000 map showing the location of the infrastructure construction; (a) the location of all perennial and intermittent streams and other water bodies as shown on a USGS topographic map, and all other perennial and intermittent streams and other water bodies located during mandatory field verification, into which the stormwater is discharged and (b) the receiving water and/or outfall sampling locations for each representative stormwater outfall. When the permittee has chosen to use a USGS topographic map and the receiving water(s) is not shown on the USGS topographic map, the location of the receiving water(s) must be hand-drawn on the USGS topographic map from where the stormwater(s) enters the receiving water(s) to the point where the receiving water(s) combines with the first blue line stream shown on the USGS topographic map;

(2). A written narrative of site specific analytical methods used to collect and analyze the samples including quality control/quality assurance procedures. This narrative must include precise sampling methodology for each sampling location;

(3). When the permittee has determined that some or all outfalls will be sampled, a rationale must be included on the Plan for the NTU limit(s) selected from Appendix B. This rationale must include the size of the construction site, the calculation of the size of the surface water drainage area, and the type of receiving water(s) (i.e., trout stream or supporting warm water fisheries); and State of Georgia Page 35 of 49 Department of Natural Resources Permit No. GAR100002 Environmental Protection Division

(4). Any additional information EPD determines necessary to be part of the Plan. EPD will provide written notice to the permittee of the information necessary and the time line for submittal.

b. Sample Type. All sampling shall be collected by 'grab samples" and the analysis of these samples must be conducted in accordance with methodology and test procedures established by 40 CFR Part 136 (unless other test procedures have been approved), the guidance document titled NPDES Storm Water Sampling Guidance Document, EPA 833-B-92-001 and guidance documents that may be prepared by the EPD.

(1). Sample containers should be labeled prior to collecting the samples.
(2). Samples should be well mixed before transferring to a secondary container.
(3). Large mouth, well cleaned and rinsed glass or plastic jars should be used for collecting samples. The jars should be cleaned thoroughly to avoid contamination.
(4). Manual, automatic or rising stage sampling may be utilized. Samples required by this permit should be analyzed immediately, but in no case later than 48 hours after collection. However, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through automated analysis is utilized. If automatic sampling is utilized and the automatic sampler is not activated until the qualifying event, the permittee must utilize manual sampling or rising stage sampling during the next qualifying event. Dilution of samples is not required. Samples may be analyzed directly with a properly calibrated turbidimeter. Samples are not required to be cooled.
(5). Sampling and analysis of the receiving water(s) or outfalls beyond the minimum frequency stated in this permit must be reported to EPD as specified in Part IV.E.

34. Appendix B rationale for NTU values at all outfall sampling points where applicable.*

NTU rationale value is 75, which is selected from Appendix B. The construction site size is 1.55 acres and the surface water drainage area is 0.002 square miles. Supporting Warm Water Fisheries.

35. Delineate all sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged. Also provide a summary chart of the justification and analysis for the representative sampling as applicable.*

Shown on Plan Sheet

36 A description of appropriate controls and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and perimeter control BMPs, (2) intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the plan may combine all of the BMPs into a single phase.*

The initial BMPs shall be the construction exit and silt fence. Intermittent BMPs shall include silt fence, construction exit, and permanent seeding. The final BMPs shall be the permanent seeding.

37. Graphic scale and north arrow.

Shown on all plan sheet

38. Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Existing Contours – USGS 1":2000' Topographical Sheets
Proposed Contours – 1":400' Centerline Profile
Shown on plan sheet.

39. Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document found at www.gaswcc.org.

No alternative BMPs are proposed

40. Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 Edition.*

No alternative BMPs are proposed.

41. Delineation of the applicable 25-foot or 50-foot undisturbed buffers adjacent to State waters and any additional buffers required by the Local Issuing Authority. Clearly note and delineate all areas of impact.

N/A

42. Delineation of on-site wetlands and all State waters located on and within 200 feet of the project site.

N/A

43. Delineation and acreage of contributing drainage basins on the project site

Shown on plan sheet.

44. Delineate on-site drainage and off-site watersheds using USGS 1":2000' topographical sheets.*

Shown on plan sheet

45. An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.

Shown on plan sheet.

46. Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate discharges without erosion. Identify/Delineate all storm water discharge points.

N/A

47. Soil series for the project site and their delineation.

The site consists of:
RmA – Rigdon-Moscotte

48. The limits of disturbance for each phase of construction.

Limits of disturbance for all phases shown on each sheet.

49. Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not attainable must be included in the Plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual must be included for structural BMPs and all calculations used by the design professional to obtain the required sediment storage when using equivalent controls. When discharging from sediment basins and impoundments, permittees are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasible, a written justification explaining this decision must be included in the Plan.

Due to topography and location silt fence is preferred over sedimentation basins.
Shown on Plan Sheet

50. Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, with legend.

See detail sheet

51. Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.

See detail sheet

52. Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.

See Detail sheet

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 046602 Jessica Vick
04/26/22
CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699

REVISIONS

ROBERTS CIVIL ENGINEERING
ST. SIMONS ISLAND | SAVANNAH | JACKSONVILLE | CHARLESTON
WWW.ROBERTSCIVILENGINEERING.COM

ESPC NOTES

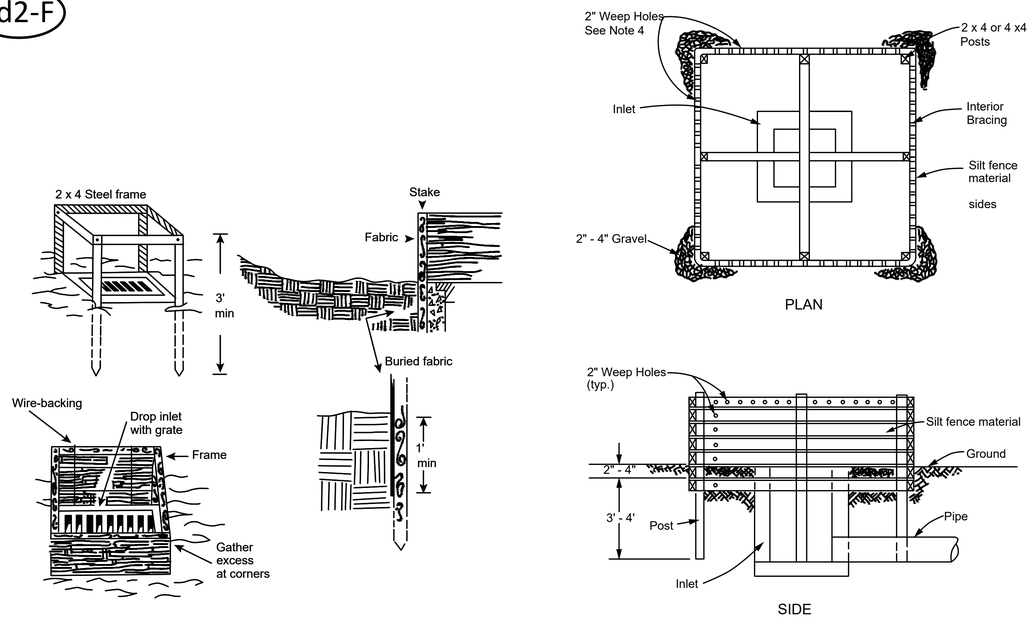
I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/26/22
PROJECT NUMBER: 21527
DRAWN BY: MDP
CHECKED BY: JLV
SCALE: NTS

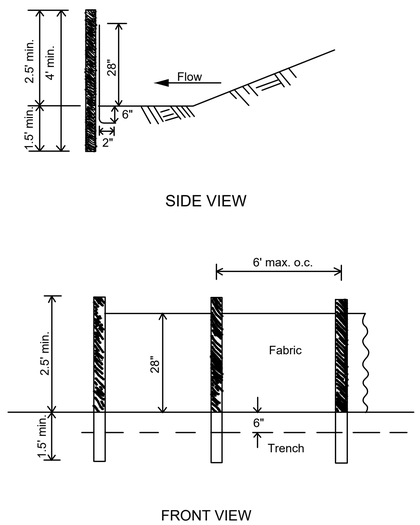
SHEET: E5

Sd2-F



INLET SEDIMENT TRAP FABRIC AND FRAME
NTS

Sd1-NS

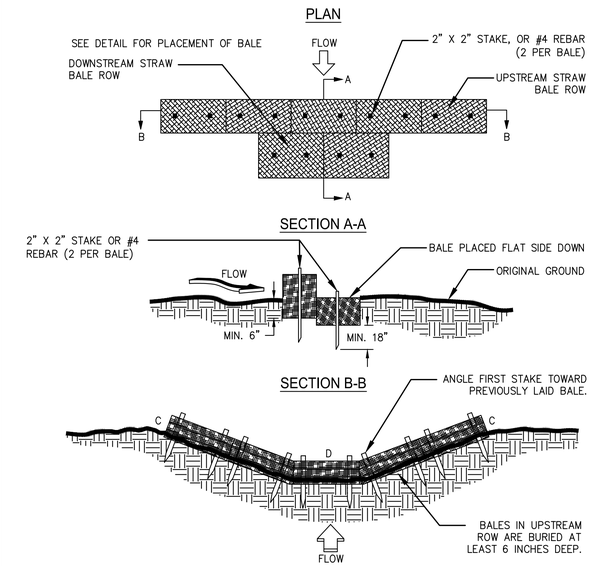


NOTE:
Use 36" D.O.T. approved fabric.
Use wood or steel posts

SILT FENCE - TYPE A

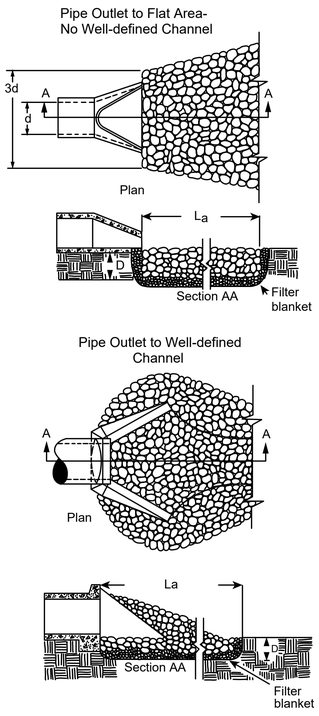
Cd-Hb

TYPICAL STRAW BALE CHECK DAM



NOTES:
1. BALES SHOULD BE BOUND WITH WIRE OR NYLON STRING AND SHOULD BE PLACED IN ROWS WITH BALE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. REMOVE #4 REBAR AFTER STRAW BALES ARE NO LONGER IN PLACE.
3. POINT C OF SECTION B–B SHOULD ALWAYS BE HIGHER THAN POINT D.
4. STRAW–BALE CHECK DAMS SHALL NOT BE USED WHERE THE DRAINAGE AREA EXCEEDS ONE ACRE.

Figure 6-12.3



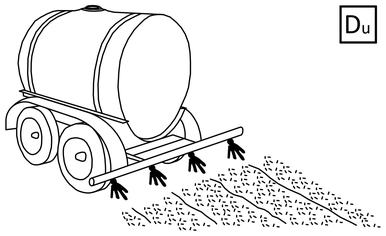
Notes

1. L_a is the length of the riprap apron.
2. D = 1.5 times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth of to the top of the bank, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Figure 6-24.3 - Riprap Outlet Protection (Modified From Va SWCC)

DUST CONTROL FOR ALL DISTURBED AREAS ALL PHASES

Du



CONTRACTOR SHALL EMPLOY THE FOLLOWING METHODS TO LIMIT THE SURFACE AND AIR MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES.

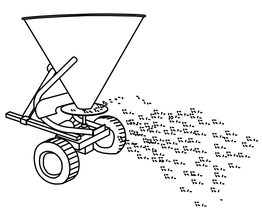
TEMPORARY METHODS:
- BARRIERS
- CALCIUM CHLORIDE
- IRRIGATION
- MULCHING
- SPRAY ON ADHESIVES
- TILLING

PERMANENANT METHODS:
- PERMANENT VEGETATION
- TOPSOIL
- STONE COVER

CHEMICALCONTROL

CHEMICAL ADHESIVE	WATER DILUTION	TYPE OF NOZZLE	APPLICATION RATE (GAL/AC)
ANIONIC ASPHALT EMULSION	7:1	SPRAY	1200
LATEX EMULSION	$12\frac{1}{2}$:1	FINE SPRAY	235
RESIN - IN - WATER EMULSION	4:1	FINE SPRAY	300

DUST CONTROL DETAIL
NTS



DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)

ESTABLISHING TEMPORARY VEGETATIVE COVER WITHQUICK GROWING GROUND COVER ON DISTURBED OR BARE LAND

Ds2

ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING OR MULCH

SITE PREPARATION
- GRADING AND SHAPING
- SEEDBED PREPARATION
- APPLY LIME AND FERTILIZER
- PLANT SEEDING, AS SPECIFIED BY REGION AND SEASON
- APPLY MULCHING MATERIAL IF NEEDED
- IRRIGATE IF NEEDED WITHOUT CAUSING EROSION

* PLANTING DATES DEPEND ON SPECIES AND REGION (MOUNTAIN, PIEDMONT OR COASTAL)

SEEDING RATES FOR TEMPORARY SEEDINGS

SPECIES	RATE (^) PER 1,000 SQ FT	RATE (^) PER ACRE	MTS - L'STONE	PLANTING DATES COASTAL (#)
RYEGRASS	0.9 POUNDS	40-50 LBS	8/1 - 12/1	8/15 - 3/1
ANNUAL LESPEDEZA	0.9 POUNDS	40 LBS	3/1 - 4/1	2/1 - 3/1
WEEPING LOVEGRASS	0.1 POUNDS	4 - 6 LBS	3/15 - 8/1	2/15 - 8/15

* ALL SEEDING NUMBERS ARE ALONE FOR MIXTURE NUMBER SEE MANUAL FOR EROSION AND SEDIMENT TABLE 6-24.1 PAGES 6-134 - 6-136

^ UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES.

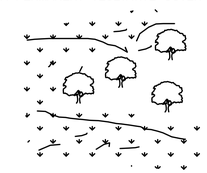
\# SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

TEMPORARY SEEDING DETAIL
NTS

Ds3

DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDINGS)

ESTABLISHING A PERMANENT VEGETATIVE COVER WITH FAST GROWING SEEDINGS.



APPLICABLE ON HIGHLY ERODIBLE OR SEVERELY ERODED AREAS, SOMETIMES CALLED "CRITICAL AREAS" INCLUDING:

- *CUT OR FILL SLOPES*
- *EARTH SPILLWAYS*
- *BORROW AREAS*
- *CHANNEL BANKS*
- *BERMS*
- *ROADSIDES*
- *SPOIL AREAS*
- *GULLIED LANDS*

GEORGIA REGISTERED No. 046602 PROFESSIONAL ENGINEER Jessica Vick
04/26/22
CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699

REVISIONS

ROBERTS CIVIL ENGINEERING
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E5 ESPC DETAILS

I-5 SOUTH EFFINGHAM ELEMENTARY SCHOOL - LANE IMPROVEMENTS
EFFINGHAM COUNTY

PREPARED FOR:
EFFINGHAM COUNTY

DATE: 04/26/22
PROJECT NUMBER: 21527
DRAWN BY: MDP
CHECKED BY: JLV
SCALE: NTS

E6

SHEET:

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DEFINITION

The planting of perennial vegetation such as trees, shrubs, vines, grasses, or legumes on exposed areas for final permanent stabilization. Permanent perennial vegetation shall be used to achieve final stabilization..

CONDITIONS

Permanent perennial vegetation is used to provide a protective cover for exposed areas including cuts, fills, dams, and other denuded areas.

SPECIFICATIONS

Grading and Shaping

Grading and shaping may not be required where hydraulic seeding and fertilizing equipment is to be used. Vertical banks shall be sloped to enable plant establishment.

When conventional seeding and fertilizing are to be done, grade and shape where feasible and practical, so that equipment can be used safely and efficiently during seedbed preparation, seeding, mulching and maintenance of the vegetation.

oncentrations of water that will cause excessive soil erosion shall be diverted to a safe outlet. Diversions and other treatment practices shall conform with the appropriate standards and specifications.

Seedbed Preparation

Seedbed preparation may not be required where hydraulic seeding and fertilizing equipment is to be used. When conventional seeding is to be used, seedbed preparation will be done as follows:

Broadcast plantings

1. Tillage at a minimum, shall adequately loosen the soil to a depth of 4 to 6 inches; alleviate compaction; incorporate lime and fertilizer; smooth and firm the soil; allow for the proper placement of seed, sprigs, or plants; and allow for the anchoring of straw or hay mulch if a disk is to be used.
2. Tillage may be done with any suitable equipment.
3. Tillage should be done on the contour where feasible.

DISTURBED AREA STABILIZATION
(WITH PERMANENT VEGETATION)

surface shall be pitted or trenched across the slope with appropriate hand tools to provide two places 6 to 8 inches apart in which seed may lodge and germinate. Hydraulic seeding may also be used.

Individual Plants

1. Where individual plants are to be set, the soil shall be prepared by excavating holes, opening furrows, or dibble planting.
2. For nursery stock plants, holes shall be large enough to accommodate roots without crowding.
3. Where pine seedlings are to be planted, subsoil under the row 36 inches deep on the contour four to six months prior to planting. Subsoiling should be done when the soil is dry, preferably in August or September.

Planting

Hydraulic Seeding

Mix the seed (innoculated if needed), fertilizer, and wood cellulose or wood pulp fiber mulch with water and apply in a slurry uniformly over the area to be treated. Apply within one hour after the mixture is made.

Conventional Seeding

Seeding will be done on a freshly prepared and firmed seedbed. For broadcast planting, use a cultipacker seeder, drill, rotary seeder, other mechanical seeder, or hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with 1/8 to 1/4 inch of soil for small seed and 1/2 to 1 inch for large seed when using a cultipacker or other suitable equipment.

No-Till Seeding

No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent (perennial) species. No-till seeding shall be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth.

Individual Plants

Shrubs, vines and sprigs may be planted with appropriate planters or hand tools. Pine trees shall be planted manually in the subsoil furrow. Each plant shall be set in a manner that will avoid crowding the roots. Nursery stock plants shall be planted at the same depth or slightly deeper than they grew at the nursery. The tips of vines and sprigs must be at or slightly above the ground surface. Where individual holes are dug, fertilizer shall be placed in the bottom of the hole, two inches of soil shall be added and the plant shall be set in the hole.

Mulching

Mulch is required for all permanent vegetation applications. Mulch applied to seeded areas shall achieve 75% soil cover. Select the mulching material from the following and apply as indicated:

1. Dry straw or dry hay of good quality and free of weed seeds can be used. Dry straw shall be applied at the rate of 2 tons per acre. Dry hay shall be applied at a rate of 2 1/2 tons per acre.
2. Wood cellulose mulch or wobd pulp fiber shall be used with hydraulic seeding. It shall be applied at the rate of 500 pounds per acre. Drystraw or dry hay shall be applied (at the rate indicated above) after hydraulic seeding.
3. One thousand pounds of wood cellulose or wood pulp fiber, which includes a tackifier, shall be used with hydraulic seeding on slopes 3/4:1 or steeper.
4. Sericea lespedeza hay containing mature seed shall be applied at a rate of three tons per acre.
5. Pine straw or pine bark shall be applied at a thickness of 3 inches for bedding purposes. Other suitable materials in sufficient quantity may be used where ornamentals or other ground covers are planted. This is not appropriate for seeded areas.
6. When using temporary erosion control blankets or block sod, mulch is not required.
7. Bituminous treated roving may be applied on planted areas on slopes, in ditches or dry waterways to prevent erosion. Bituminous treated roving shall be applied within 24 hours after an area has been planted. Application rates and materials must meet Georgia Department of Transportation specifications.

Wood cellulose and wood pulp fibers shall not contain germination or growth inhibiting factors. They shall be evenly dispersed when agitated in water. The fibers shall contain a dye to allow visual metering and aid in uniform application during seeding.

Applying Mulch

Straw or hay mulch will be spread uniformly within 24 hours after seeding and/or planting. The mulch may be spread by blower-type spreading equipment, other spreading equipment or by hand. Mulch shall be applied to cover 75% of the soil surface.

Wood cellulose or wood fiber mulch shall be applied uniformly with hydraulic seeding equipment.

Anchoring Mulch

Anchor straw or hay mulch immediately after application by one of the following methods:
1. Emulsified asphalt can be (a) sprayed uniformly onto the mulch as it is ejected from the blower machine or (b) sprayed on the mulch immediately following mulch application when straw or hay is spread by methods other than special blower equipment.

The combination of asphalt emulsion and water shall consist of a homogeneous mixture satisfactory for spraying. The mixture shall consist of 100 gallons of grade SS-1h or CSS-1h emulsified asphalt and 100 gallons of water per ton of mulch.
Care shall be taken at all times to protect state waters, the public, adjacent property, pavements, curbs, sidewalks, and all other structures from asphalt discoloration.
2. Hay and straw mulch shall be pressed into the soil immediately after the mulch is spread. A special "packer disk" or disk harrow with the disks set straight may be used. The disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disks shall be dull enough to press the mulch into the ground without cutting it, leaving much of it in an erect position. Mulch shall not be plowed into the soil.
3. Synthetic tackifiers or binders approved by GDOT shall be applied in conjunction with or immediately after the mulch is spread. Synthetic tackifiers shall be mixed and applied according to manufacturer's specifications. Refer to Tb - Tackifiers and Binders.
4. Rye or wheat can be included with Fall and Winter plantings to stabilize the mulch. They shall be applied at a rate of one-quarter to one half bushel per acre.
5. Plastic mesh or netting with mesh no larger than one inch by one inch may be needed to anchor straw or hay mulch on unstable soils and concentrated flow areas. These materials shall be installed and anchored according to manufacturer's specifications.

Irrigation

Irrigation shall be applied at a rate that will not cause runoff.

SEEDING RATES FOR PERMANENT SEEDING

SPECIES	RATE Per 1,000 sq.ft.	RATE Per Acre *	PLANTING DATES **
BAHIA	1.4 POUNDS	60 LBS.	1/1-12/31
BERMUDA	0.2 POUND	10 LBS.	2/15-7/1
CENTIPEDE	BLOCK SOD ONLY	BLOCK SOD ONLY	4/1-7/1
LESPEDEZA	1.7 POUNDS	75 LBS.	1/1-12/31
WEEPING LOVE GRASS	0.1 POUND	4 LBS.	2/1-6/15
SWITCH GRASS	0.9 POUND	40 LBS.	3/15-6/1

* Unusual site conditions may require heavier seeding rates.
** Seeding dates may need to be altered to fit temperature variations and conditions.

DEFINITION

The establishment of temporary vegetative cover with fast growing seedings for seasonal protection on disturbed or denuded areas.

CONDITIONS

Temporary grassing, instead of mulch, can be applied to rough graded areas that will be exposed for less than six months. Temporary vegetative measures should be coordinated with permanent measures to assure economical and effective stabilization. Most types of temporary vegetation are ideal to use as companion crops until the permanent vegetation is established.

SEEDING RATES FOR TEMPORARY SEEDING

SPECIES	RATE Per 1,000 sq.ft.	RATE Per Acre *	PLANTING DATES **
Rye	3.9 pounds	3 bu.	9/1-3/1
Ryegrass	0.9 pound	40 lbs.	8/15-4/1
Annual Lespedeza	0.9 pound	40 lbs.	1/15-3/15
Weeping Lovegrass	0.1 pound	4 lbs.	2/15-6/15
Sudangrass	1.4 pounds	60 lbs.	3/1-8/1
Browntop Millet	0.9 pound	40 lbs.	4/1-7/15
Wheat	4.1 pounds	3 bu.	9/15-2/1

* Unusual site conditions may require heavier seeding rates
** Seeding dates may need to be altered to fit temperture variations and conditions.

DISTURBED AREA STABILIZATION
(WITH TEMPORARY SEEDING)

SPECIFICATIONS

Grading and Shaping

Excessive water run-off shall be reduced by properly designed and installed erosion control practices such as closed drains, ditches, dikes, diversions, sediment barriers and others.

No shaping or grading is required if slopes can be stabilized by hand-seeded vegetation or if hydraulic seeding equipment is to be used.

Seedbed Preparation

When a hydraulic seeder is used, seedbed preparation is not required. When using conventional or handseeding, seedbed preparation is not required if the soil material is loose and not sealed by rainfall.

When soil has been sealed by rainfall or consists of smooth cut slopes, the soil shall be pitted, trenched or otherwise scarified to provide a place for seed to lodge and germinate.

Lime and Fertilizer

Agricultural lime is required unless soil tests indicate otherwise. Apply agricultural lime at a rate of one ton per acre. Graded areas require lime application. Soils can be tested to determine if fertilizer is needed. On reasonably fertile soils or soil material, fertilizer is not required. For soils with very low fertility, 500 to 700 pounds of 10-10-10 fertilizer or the equivalent per acre (12-16 lbs./1,000 sq. ft.) shall be applied. Fertilizer should be applied before land preparation and incorporated with a disk, ripper or chisel.

Seeding

Select a grass or grass-legume mixture suitable to the area and season of the year. Seed shall be applied uniformly by hand, cyclone seeder, drill, cultipacker seeder, or hydraulic seeder (slurry including seed and fertilizer). Drill or cultipacker seeders should normally place seed one-quarter to one-half inch deep. Appropriate depth of planting is ten times the seed diameter. Soil should be "raked" lightly to cover seed with soil if seeded by hand.

Mulching

Temporary vegetation can, in most cases, be established without the use of mulch. Mulch without seeding should be considered for short term protection. Refer to Ds1 - Disturbed Area Stabilization (With Mulching Only).

Irrigation

During times of drought, water shall be applied at a rate not causing runoff and erosion. The soil shall be thoroughly wetted to a depth that will insure germination of the seed. Subsequent applications should be made when needed.

	Area	Sowing Season	Species	Seed	Fertilizer	Lime	Mulch
Ds1							2" - 4" depth dry straw or dry hay
Ds2	Flat to rolling terrain with slopes less than 3:1	8/1-4/1 4/1-8/1	Rye Browntop Millet	1/2 BU/ac (28 lb) 10 lb/ac	12 lb/1000 sq. ft (10-10-10)	*	
Ds3	Flat to rolling terrain with slopes less than 3:1	1/1-3/1 3/2-6/1 6/2-9/1 9/2-12/31	Common Bermuda Common Bermuda Common Bermuda Common Bermuda	5 lb/acre unhulled and 5 lb/acre hulled 10 lb/acre unhulled 5 lb/acre unhulled and 5 lb/acre hulled 10 lb/acre unhulled	35 lb/1000 sq. ft (6-12-12)	1-2 tons/ acre	2 tons/acre-dry straw 2.5 tons/acre-dry hay
Ds4	Areas requiring immediate vegetative cover, drop inlets, grass swales, and waterways with intermittent flow.		Bermudagrass Bahiagrass Centipede St. Augustine Zoysia		1500 lb/acre (6-12-12)		

* as determined by soil test.

MULCH, LIME, SEEDING AND FERTILIZER APPLICATION RATES

06-01-2022 TO 12-01-2022

ACTIVITY	MONTH 1	2	3	4	5	6
INSTALL AND MAINTAIN INITIAL BMP's	■	■	■	■	■	■
CONSTRUCTION	■	■	■	■	■	■
INSTALL AND MAINTAIN INTERMEDIATE BMP's		■	■	■	■	■
INSTALL FINAL BMP's						■

CONSTRUCTION TIMELINE

GEORGIA REGISTERED No. 046602 PROFESSIONAL ENGINEER Jessica Vick

04/26/22
CERTIFIED DESIGN PROFESSIONAL:
Jessica Vick, P.E.
LEVEL II CERTIFICATION #: 0000062699

REVISIONS

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